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Literature Review For Networking And Communication Technology

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Michael Georgiopoulos

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University of Central Florida

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Literature Review for Networking and Communication Technology

iST

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TECHNOLOGY LABORATORY

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J. THOMPSON

LITERATURE REVIEW
FOR
NETWORKING AND COMMUNICATION TECHNOLOGY

OCTOBER 1989

PREPARED BY:

INSTITUTE FOR SIMULATION AND TRAINING
UNIVERSITY OF CENTRAL FLORIDA
12424 RESEARCH PARKWAY
ORLANDO, FL 32826

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NETWORKING AND COMMUNICATION TECHNOLOGY LABORATORY
LITERATURE REVIEW

1.0   INTRODUCTION

1.1   Purpose

The purpose of this report is to document the results of a literature search performed in the area of networking and communication technology. This information search was undertaken to assess the effectiveness and resource requirements of current networking and communication technology, and to provide guidance for future enhancements.

1.2   Statement of the Problem

There is a need for networked systems for use in multi-service, multi-organizational team training. A literature search was performed to identify new networking and communication technologies, determine the state-of-the-art in this arena, and provide guidance for the future maximization of operational assets.

2.0   INVESTIGATION METHODOLOGY

2.1   Procedures

Relevant information was located through the search of various indices and computerized data bases.

2.1.1   Indices

2.1.1.1   Papers and Articles

Approximately 200 abstracts or bibliographies of relevance were located through the use of indices. Indices queried include the Applied Science and Technology Index, Computer Abstracts, Government Documents, Computing Review, and Computer and Control Abstracts. After careful review, copies of 30 of these articles were obtained, either through the UCF library, or with the use of inter-library loan, and retained for reference in the IST library.

All material contained in the IST library is available for review upon request. Additionally, IST library information has been shared with the PM TRADE data base on a

limited basis. A copy of the titles and IST library file
numbers of the papers and articles of relevance to the
networking and communication technology effort is contained
in Appendix A.

2.1.1.2   Books

Nearly 50 books of interest were also discovered by
quizzing indices. Directories utilized include the Applied
Science and Technology Index, Computer Abstracts, Government
Documents, Computing Review, and Computer and Control
Abstracts. Three books and the abstracts of five others were
added to the IST library. The three books were purchased
directly from the publisher, Howard & Sams Publishing. The
book titles and abstracts are included in the information
found in Appendix A.

2.1.2   On-line Data File Search

The NTIS data file was queried. The key terms
"parallel programming" and "distributed processing" were
entered on-line. More than 300 titles resulted. A copy of
the output is included in Appendix B. The listing was
evaluated and pared to 68 titles considered of sufficient
interest to qualify for further investigation.

Abstracts were requested for the 68 titles. A copy
of the abstracts is located in Appendix C. Upon review of
the abstracts, copies of 38 articles were requested. 25 of
the articles were ordered through NTIS; the UCF inter-library
loan service procured the remaining 13 from NASA's library.
The article copies were placed in the IST library, and are
included in Appendix A.

2.1.3   Other

The implementation of medium-access protocol of
local area networks was also investigated as part of this
effort. Both Carrier Sense Multiple Access with Collision
Detection Protocols and Token Ring Protocols were examined and
evaluated. The literature reviewed during this investigation
is included in the latter portion of Appendix A. Copies of
this information is not currently available in house, but may
be obtained upon request.

Additionally, languages for specifying the process
switch level of interprocessor communications were also
investigated. Carnegie Mellon University has offered DURRA,
an SEI developed language, to IST. A listing of all DURRA
documentation currently available at IST is located in
Appendix D.

3.0   **SUMMARY**

This Networking and Communication Technology literature search was undertaken to evaluate current networking and communication technology efforts, and ascertain possible future trends and areas of augmentation. The effort included locating and acquiring the data, and entering it into the IST library. Access to all literature located in the IST library is available upon request.

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APPENDIX A

TITLE	FILE #	NAME
CRONUS, A DISTRIBUTED OPERATING SYSTEM: CRONUS DOS IMPLEMENTATIONS	B - 45	
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NETWORK PROTOCOLS: PROCEEDINGS OF THE JOINT IBM/UNIVERSITY OF NEWCASTLE UPON TYNE SEMINAR	B - 49	
TAC - 1: KNOWLEDGE BASED AIRFORCE TACTICAL BATTLE MANAGEMENT TESTBED	B - 50	
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CITATIONS FROM THE INFORMATION SERVICES FOR THE PHYSICS AND ENGINEERING COMMUNITIES INSPEC	B-54	
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TITLE	FILE #	NAME
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UNIX BASED PROGRAMMING TOOLS FOR LOCALLY DISTRIBUTED NETWORK APPLICATIONS	B - 68	
HANDBOOK OF COMPUTER COMMUNICATIONS STANDARDS LOCAL NETWORK STANDARDS VOLUME 2	B - 69	
HANDBOOK OF COMPUTER COMMUNICATIONS STANDARDS DEPARTMENT OF DEFENSE (DOD) PROTOCOL STANDARDS	B - 70	
HIGH SPEED FIBER OPTICS LOCAL AREA NETWORKS: DESIGN AND IMPLEMENTATION	B - 71	
AN INTERFACE BETWEEN OBJECT ORIENTED SYSTEMS	B - 72	
DISTRIBUTED OPERATING SYSTEMS: AN OVERVIEW	B - 73	
DISTRIBUTED COMPUTATION OF GRAPHICS PRIMATIVES ON A TRANSPUTER NETWORK	B - 74	
PERFORMANCE ANALYSIS OF FDDI	B - 75	
NETWORK PROTOCOLS FOR REAL TIME APPLICATIONS	B - 76	
TEST AND EVALUATION OF THE TRANSPUTER IN A MULTI-TRANSPUTER SYSTEM	B - 77	

TITLE	FILE #	NAME
ANSI/IEEE INTERNATIONAL STANDARD 8802/3 "Carrier Sense Multiple Access with Collision Detection	can be	_____
ETHERNET DISTRIBUTED PACKET SWITCHING FOR LOCAL COMPUTER NETWORKS	can be	_____
A DECENTRALIZED CONFLICT FREE PROTOCOL, GBRAM FOR LARGE SCALE LOCAL NETWORKS	can be	_____
ANSI/IEEE - INTERNATIONAL STANDARD 8802/5 "Token Ring Access"	can be	_____
"Measured Performance of the Ethernet" ADVANCES IN LOCAL AREA NETWORKS	can be	_____
"Local Area Networks - Major Technologies and Trends" in LOCAL AREA NETWORKS	can be	_____
"Architecture and design of a reliable token ring network" in LOCAL AREA NETWORKS	can be	_____
"Description of FASNET - a Unidirectional Local Area Communications Network" in LOCAL AREA NETWORKS	can be	_____
"Optic Fibers in Local Area Networks" in LOCAL AREA NETWORKS	can be	_____
"A Distributed Experimental Communication System" in LOCAL AREA NETWORKS	can be	_____
SIMNET NETWORK PERFORMANCE	can be	_____

TITLE	FILE #	NAME
THE SIMNET NETWORK AND PROTOCOLS	can be	_____
BRAM THE BROADCAST RECOGNITION ACCESS METHOD	can be	_____
"Long Haul Networking of Simulators" PROCEEDINGS 10th INTERSERVICE/INDUSTRY TRAINING SYSTEMS	can be	_____
"ISDN 83" special issue on ISDNs	can be	_____
"Transition to ISDN - an Overview" special issue on ISDNs	can be	_____
ISDN PROTOCOL ARCHITECTURE	can be	_____
DESIGN APPROACHES AND PERFORMANCE CRITERIA FOR INTERGRATED VOICE/DATA SWITCHING	can be	_____
TELECOMMUNICATION NETWORKS	can be	_____
DATA NETWORKS	can be	_____
SIMULATION MODELING AND SIMNET	can be	_____
"Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer	can be	_____

TITLE	FILE #	NAME
"Token-Passing Bus Access Method" ANSI/IEE - DRAFT INTERNATIONAL STANDARD ISO/DIS 8802/4	can be	_____
"Token Ring Access" ANSI/IEEE - INTERNATIONAL STANDARD 8802/5	can be	_____
"Performance Models of Token Ring Local Area Networks" PROCEEDINGS OF ACM SIGMETRICS	can be	_____
SIMSCRIPT II.5 PROGRAMING LANGUAGE	can be	_____
A TOKEN RING NETWORK FOR LOCAL DATA COMMUNICATION	can be	_____
"SIMNET ETHERNET Performance" BBN TECHNICAL REPORT No 6711	can be	_____
DATA COLLECTION AND ANALYSIS: THE KEYS FOR INTERACTIVE TRAINING FOR COMBAT READINESS	can be	_____
"Concurrent C" TECHNICAL REPORT	can be	_____
"Benchmarking LAN Protocol Analyzers" PROCEEDINGS OF 13th IEEE CONFERENCE ON LOCAL COMPUTER	can be	_____
HP 4792A LAN PROTOCOL ANALYZER: VOL I: GETTING STARTED, VOL II: OPERATING MANUAL	can be	_____
CONCURRENT EUCLID, THE UNIX SYSTEM AND TUNIS	can be	_____

TITLE	FILE #	NAME
STRUCTURED CONCURRENT PROGRAMMING WITH OPERATING SYSTEM APPLICATIONS	can be	_____
THE C PROGRAMMING LANGUAGE	can be	_____
"First FDDI Local Area Network" PROCEEDINGS OF 12th IEEE CONFERENCE ON LOCAL COMPUTER NETWORKS	can be	_____
COMPUTER PERFORMANCE MODELING HANDBOOK	can be	_____
EMMERGING STANDARDS, HARDWARE, AND SOFTWARE LIGHT THE WAY TO FDDI	can be	_____
"ETHERNET: DISTRIBUTED PACKET SWITCHING FOR LOCAL COMPUTER NETWORKS	can be	_____
"The SIMNET Network and Protocols" BBN Report No. 7102	can be	_____
"The SIMNET Network and Protocols" BBN Report No. 6369	can be	_____
INTRODUCTION TO SIMULATION AND SLAM II (2nd edition)	can be	_____
"SHIPNET: A Real-Time Local Area Network For Ships" PROCEEDINGS OF 13th IEEE CONFERENCE ON LOCAL	can be	_____
"Performance Analysis of the FDDI Token-Ring" TECHNICAL REPORT TR-8802	can be	_____

TITLE	FILE #	NAME
LOCAL NETWORKS	can be	_____
"Evaluation of Real-Time Transport Protocols" TECHNICAL REPORT TR-88-21	can be	_____
A LOCAL COMMUNICATION NETWORK BASED ON INTERCONNECTED TOKEN RINGS: A TUTORIAL	can be	_____
CALCULATING THE MAXIMUM MEAN DATA RATE IN LOCAL AREA NETWORKS	can be	_____
NETWORK PROTOCOLS	can be	_____
LOCAL COMPUTER NETWORK TECHNOLOGIES	can be	_____
"A Real-Time Message System for Token Ring Networks" TECHNICAL REPORT TR-88-08	can be	_____
"Simulation of Local Computer Networks" PROCEEDINGS OF 4th IEEE CONFERENCE ON LOCAL	can be	_____

TITLE	FILE #
ETHERNET DISTRIBUTED PACKET SWITCHING FOR LOCAL COMPUTER NETWORKS	can be
A DECENTRALIZED CONFLICT FREE PROTOCOL, GBRAM FOR LARGE SCALE LOCAL NETWORKS	can be
ANSI/IEEE - INTERNATIONAL STANDARD 8802/5 "Token Ring Access"	can be
"Measured Performance of the Ethernet" ADVANCES IN LOCAL AREA NETWORKS	can be
"Local Area Networks - Major Technologies and Trends" in LOCAL AREA NETWORKS	can be
"Architecture and design of a reliable token ring network" in LOCAL AREA NETWORKS	can be
"Description of FASNET - a Unidirectional Local Area Communications Network" in LOCAL AREA NETWORKS	can be
"Optic Fibers in Local Area Networks" in LOCAL AREA NETWORKS	can be
"A Distributed Experimental Communication System" in LOCAL AREA NETWORKS	can be
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BRAM THE BROADCAST RECOGNITION ACCESS METHOD	can be
"Long Haul Networking of Simulators" PROCEEDINGS 10th INTERSERVICE/INDUSTRY TRAINING SYSTEMS CONFERENCE	can be

TITLE	FILE #
"SIMNET ETHERNET Performance" BBN TECHNICAL REPORT No 6711	can be
DATA COLLECTION AND ANALYSIS: THE KEYS FOR INTERACTIVE TRAINING FOR COMBAT READINESS	can be
"Concurrent C" TECHNICAL REPORT	can be
"Benchmarking LAN Protocol Analyzers"PROCEEDINGS OF 13th IEEE CONFERENCE ON LOCAL COMPUTER NETWORKS	can be
HP 4792A LAN PROTOCOL ANALYZER: VOL I: GETTING STARTED, VOL II: OPERATING MANUAL	can be
CONCURRENT EUCLID, THE UNIX SYSTEM AND TUNIS	can be
STRUCTURED CONCURRENT PROGRAMMING WITH OPERATING SYSTEM APPLICATIONS	can be
THE C PROGRAMMING LANGUAGE	can be
"First FDDI Local Area Network" PROCEEDINGS OF 12th IEEE CONFERENCE ON LOCAL COMPUTER NETWORKS	can be
COMPUTER PERFORMANCE MODELING HANDBOOK	can be
EMMERGING STANDARDS, HARDWARE, AND SOFTWARE LIGHT THE WAY TO FDDI	can be
"ETHERNET: DISTRIBUTED PACKET SWITCHING FOR LOCAL COMPUTER NETWORKS	can be
"The SIMNET Network and Protocols" BBN Report No. 7102	can be

TITLE	FILE #
"The SIMNET Network and Protocols" BBN Report No. 6369	can be
INTRODUCTION TO SIMULATION AND SLAM II (2nd edition)	can be
"SHIPNET: A Real-Time Local Area Network For Ships" PROCEEDINGS OF 13th IEEE CONFERENCE ON LOCAL COMPUTER	can be
"Performance Analysis of the FDDI Token-Ring" TECHNICAL REPORT TR-8802	can be
LOCAL NETWORKS	can be
"Evaluation of Real-Time Transport Protocols" TECHNICAL REPORT TR-88-21	can be
A LOCAL COMMUNICATION NETWORK BASED ON INTERCONNECTED TOKEN RINGS: A TUTORIAL	can be
CALCULATING THE MAXIMUM MEAN DATA RATE IN LOCAL AREA NETWORKS	can be
NETWORK PROTOCOLS	can be
LOCAL COMPUTER NETWORK TECHNOLOGIES	can be
"A Real-Time Message System for Token Ring Networks" TECHNICAL REPORT TR-88-08	can be
"Simulation of Local Computer Networks" PROCEEDINGS OF 4th IEEE CONFERENCE ON LOCAL COMPUTER NETWORKS	can be

SUBJECT   MODELING OF COMPUTER
COMMUNICATION SYSTEMS

TITLE   NETWORKS AND DISTRIBUTED
COMPUTATION: CONCEPTS, TOOLS, AND
ALGORITHMS

AUTHOR(S)   MICHEL RAYNAL

PUBLISHER   MIT PRESS, CAMBRIDGE, MASS.
DATE OF PUBLICATION   1988
PAGE NUMBER   166
FILE #   B - 05

SUBJECT   MODELING OF COMPUTER
COMMUNICATION SYSTEMS

TITLE   EFFICIENT COMPUTATION OF OPTIMAL
ASSIGNMENTS FOR DISTRIBUTED TASKS

AUTHOR(S)   J. B. SINCLAIR

PUBLISHER   JOURNAL OF PARALLEL AND
DATE OF PUBLICATION   1987   VOL 4
PAGE NUMBER   342 - 362
FILE #   B - 06

AUTHOR(S)   ARIEL ORDA
            RAPHAEL ROM

AUTHOR(S)   ASOK RAY

AUTHOR(S)   PERNG-YI RICHARD MA
EDWARD Y. S. LEE
MASAHIRO TSUCHIYA

AUTHOR(S)   DEIF N. ATALLAH

SUBJECT   MODELING OF COMPUTER
COMMUNICATIONS SYSTEMS

TITLE   AN EFFICIENT METHOD FOR SIMULATING
TOKEN RING BUS ACCESS PROTOCOLS

AUTHOR(S)   D. PANCHMATIA
J.L. HAMMOND
W. TIPPER

PUBLISHER   PROCEEDINGS: SOUTHEASTERN
DATE OF PUBLICATION   1988
PAGE NUMBER   165-169
FILE #   B - 35

SUBJECT   MODELING OF COMPUTER
COMMUNICATIONS SYSTEMS

TITLE   SHIPNET: A REAL-TIME LOCAL AREA
NETWORK FOR SHIPS

AUTHOR(S)   ROBERT SIMONCIC
ALFRED C. WEAVER
BRENDAN G. CAIN
M. ALEXANDER COLVIN

PUBLISHER   UNIVERSITY OF VIRGINIA
DATE OF PUBLICATION   6 JUNE, 1988
PAGE NUMBER   TR-88-15
FILE #   B - 36

SUBJECT   MODELING OF COMPUTER
          COMMUNICATION SYSTEMS

TITLE   MILITARY STANDARD
          COMMON LONG HAUL AND TACTICAL
          COMMUNICATION SYSTEM TECHNICAL
          STANDARDS

AUTHOR(S)   NONE

PUBLISHER   DEPARTMENT OF DEFENSE
DATE OF PUBLICATION 15 NOVEMBER, 1972
PAGE NUMBER   186
FILE #   B - 39

SUBJECT   MODELING OF COMPUTER
          COMMUNICATION SYSTEMS

TITLE   VERY LARGE AREA NETWORKS (VLAN)
          KNOWLEDGE-BASE APPLIED TO SPACE
          COMMUNICATION PROBLEMS

AUTHOR(S)   CAROL S. ZANDER

PUBLISHER   DEPT. COMPUTER SCIENCE COLORADO
DATE OF PUBLICATION OCTOBER 1988
PAGE NUMBER   401 - 409
FILE #   B - 40

SUBJECT MODELING OF COMPUTER
         COMMUNICATION SYSTEMS
TITLE   EUROPEAN SEMINAR ON NEURAL
         COMPUTING

AUTHOR(S) CLAIRE ZOMZELY-NEURATH

PUBLISHER   US OFFICE OF NAVAL RESEARCH,
DATE OF PUBLICATION 31 AUGUST 1988
PAGE NUMBER   35
FILE #   B - 41

SUBJECT MODELING OF COMPUTER
         COMMUNICATION SYSTEMS
TITLE   THE FORCE

AUTHOR(S) HARRY JORDAN

PUBLISHER   NTIS - COMPUTER SYSTEMS DESIGN
DATE OF PUBLICATION JANUARY 1987
PAGE NUMBER   42
FILE #   B - 42

AUTHOR(S)   R. SCHANTZ   K. SCHRODER
M. BARROW   G. BONO
M. DEAN   R. GURWITZ
K. LAM   K. LEBOWITZ
S. LIPSON   P. NEVES
R. SANDS

AUTHOR(S)   OLIVER A. McBRYAN

SUBJECT   MODELING OF COMPUTER
              COMMUNICATION SYSTEMS

TITLE   CITATIONS FROM THE INFORMATION
              SERVICES FOR THE PHYSICS AND
              ENGINEERING COMMUNITIES INSPEC
              DATABASE
              COMPUTER NETWORKS: DATA
              COMMUNICATION ARCHITECTURE AND

AUTHOR(S)

PUBLISHER   NTIS
DATE OF PUBLICATION   1988
PAGE NUMBER   130
FILE #   B - 53

SUBJECT   MODELING OF COMPUTER
              COMMUNICATION SYSTEMS

TITLE   CITATIONS FROM THE INFORMATION
              SERVICES FOR THE PHYSICS AND
              ENGINEERING COMMUNITIES INSPEC
              DATABASE
              DECNET: DIGITAL EQUIPMENT
              CORPORATION NETWORK ARCHITECTURE

AUTHOR(S)

PUBLISHER   NTIS
DATE OF PUBLICATION   SEPT 1988
PAGE NUMBER   62
FILE #   B-54

SUBJECT MODELING OF COMPUTER
         COMMUNICATION SYSTEMS
TITLE   EUROPEAN SEMINAR ON NEURAL
         COMPUTING

AUTHOR(S) CLAIRE ZOMZELY-NEURATH

PUBLISHER OFFICE OF NAVAL RESEARCH
DATE OF PUBLICATION AUG. 31, 1988
PAGE NUMBER 38   (presently on microfiche)
FILE # B - 55

SUBJECT MODELING OF COMPUTER
         COMMUNICATION SYSTEMS
TITLE   OPTIMAL PARTITIONING OF RANDOM
         PROGRAMS ACROSS TWO PROCESSORS

AUTHOR(S) D. M. NICOL

PUBLISHER LANGLEY RESEARCH CENTER
DATE OF PUBLICATION AUG. 1986
PAGE NUMBER 27   (presently on microfiche)
FILE # B - 56

SUBJECT MODELING OF COMPUTER
COMMUNICATION SYSTEMS

TITLE ANALYSIS OF FDDI SYNCHRONOUS
TRAFFIC DELAYS

AUTHOR(S) MARJORY J. JOHNSON

PUBLISHER NASA
DATE OF PUBLICATION JAN. 1988
PAGE NUMBER 21   (presently on microfiche)
FILE # B - 59

SUBJECT MODELING OF COMPUTER
COMMUNICATION SYSTEMS

TITLE THE EFFECT OF DISTRIBUTED
COMPUTING TECHNOLOGY ON WIDE AREA
NETWORK CAPACITY REQUIREMENTS

AUTHOR(S) DENNIS HALL
WILLIAM JOHNSTON
MARGE HUTCHINSON
MENDEL ROSENBLUM
DAVID ROBERTSON

PUBLISHER NTIS - LAWRENCE BERKELEY LABATORY
DATE OF PUBLICATION FEB. 1987
PAGE NUMBER 1 0
FILE # B - 60

SUBJECT MODELING OF COMPUTER
COMMUNICATION SYSTEMS

TITLE THE BLAZE FAMILY OF LANGUAGES:
PROGRAMMING ENVIRONMENTS FOR
SHARED AND DISTRIBUTED MEMORY
ARCHITECTURES

AUTHOR(S) PIYUSH MEHROTRA
JOHN VAN ROSENDALE

PUBLISHER NTIS - ARGONNE NATIONAL LABATORY
DATE OF PUBLICATION JUNE 1988
PAGE NUMBER 13
FILE # B - 61

SUBJECT MODELING OF COMPUTER
COMMUNICATION SYSTEMS

TITLE EFFICIENT PARALLEL ARCHITECTURE
FOR HIGHLY COUPLED REAL-TIME
LINEAR SYSTEM APPLICATIONS

AUTHOR(S) CHESTER C. CARROLL
ABDOLLAH HOMAIFAR
SOUMAVO BARUA

PUBLISHER BUREAU OF ENGINEERING RESEARCH THE
DATE OF PUBLICATION JANUARY 1988
PAGE NUMBER 85
FILE # B - 62

SUBJECT   MODELING OF COMPUTER
           COMMUNICATION SYSTEMS
TITLE   ESTIMATION AND IDENTIFICATION OF
           NONLINEAR DYNAMIC SYSTEMS

AUTHOR(S) D. JOSEPH MOOK

PUBLISHER   AIAA JOURNAL
DATE OF PUBLICATION JULY 1989
PAGE NUMBER   968 - 974
FILE #   B - 63

SUBJECT   MODELING OF COMPUTER
           COMMUNICATION SYSTEMS
TITLE   SIMULATION NETWORKING PROTOCOL
           ALTERNATIVES

AUTHOR(S) DR. MICHAEL GEORGIOPOULOS

PUBLISHER   IST
DATE OF PUBLICATION 1 AUGUST 1988 THRU 31 JULY 1989
PAGE NUMBER   78
FILE #   B - 64

SUBJECT   MODELING OF COMPUTER
           COMMUNICATION SYSTEMS
TITLE   HIGH SPEED FIBER OPTICS LOCAL AREA
           NETWORKS: DESIGN AND
           IMPLEMENTATION

AUTHOR(S) F. A. TOBAQI

PUBLISHER   STANFORD UNIVERSITY
DATE OF PUBLICATION SEPTEMBER 29, 1988
PAGE NUMBER   9   (presently on microfiche)
FILE #   B - 71

SUBJECT   MODELING OF COMPUTER
           COMMUNICATION SYSTEMS
TITLE   AN INTERFACE BETWEEN OBJECT
           ORIENTED SYSTEMS

AUTHOR(S) LAWRENCE A. CROWL

PUBLISHER   UNIVERSITY OF ROCHESTER COMPUTER
DATE OF PUBLICATION APRIL 1987
PAGE NUMBER   20
FILE #   B - 72

SUBJECT   MODELING OF COMPUTER
          COMMUNICATION SYSTEMS
TITLE   TEST AND EVALUATION OF THE
          TRANSPUTER IN A MULTI-TRANSPUTER
          SYSTEM

AUTHOR(S)   JOSE VANNI FILHO

PUBLISHER   NAVAL POSTGRADUATE SCHOOL
DATE OF PUBLICATION JUNE 1987
PAGE NUMBER   201
FILE #   B - 77

SUBJECT   MODELING OF COMPUTER
          COMMUNICATION SYSTEMS
TITLE   ANSI/IEEE INTERNATIONAL STANDARD
          8802/3 "Carrier Sense Multiple Access
          with Collision Detection (CSMA/CD)
          Access Method and Physical Layer
          Specification"

AUTHOR(S)

PUBLISHER   IEEE Computer society press
DATE OF PUBLICATION 1985
PAGE NUMBER
FILE #   can be accessed upon request

SUBJECT   MODELING OF COMPUTER
                 COMMUNICATION SYSTEMS

TITLE   ANSI/IEEE - INTERNATIONAL STANDARD
               8802/5 "Token Ring Access"

AUTHOR(S)

PUBLISHER   IEEE COMPUTER SOCIETY PRESS
DATE OF PUBLICATION   1985
PAGE NUMBER
FILE #   can be accessed upon request

SUBJECT   MODELING OF COMPUTER
                 COMMUNICATION SYSTEMS

TITLE   "Measured Performance of the Ethernet"
               ADVANCES IN LOCAL AREA NETWORKS

AUTHOR(S)   T.A. GONSALVES
                 EDITORS:
                 K. KUMMERLE
                 J.O. LIMB
                 F.A. TOBAGI

PUBLISHER   IEEE PRESS
DATE OF PUBLICATION   1987
PAGE NUMBER   383 - 410
FILE #   can be accessed upon request

SUBJECT MODELING OF COMPUTER
COMMUNICATION SYSTEMS

TITLE "Local Area Networks - Major
Technologies and Trends" in LOCAL
AREA NETWORKS

AUTHOR(S) K. KUMMERLE
M. REISER
EDITORS:
K. KUMMERLE
J.O. LIMB
F.A. TOBAGI

PUBLISHER IEEE PRESS
DATE OF PUBLICATION 1987
PAGE NUMBER 2 - 27
FILE # can be accessed upon request

SUBJECT MODELING OF COMPUTER
COMMUNICATION SYSTEMS

TITLE "Architecture and design of a reliable
token ring network" in LOCAL AREA
NETWORKS

AUTHOR(S) W. BUX   F.H. CLOSS
K. KUMMERLE   H.J.KELLER
H.R. MUELLER
EDITORS:
K. KUMMERLE   J.O. LIMB
F.A. TOBAGI

PUBLISHER IEEE PRESS
DATE OF PUBLICATION 1987
PAGE NUMBER 67 - 80
FILE # can be accessed upon request

SUBJECT MODELING OF COMPUTER
         COMMUNICATION SYSTEMS

TITLE   "Description of FASNET - a
         Unidirectional Local Area
         Communications Network" in LOCAL
         AREA NETWORKS

AUTHOR(S) J.O. LIMB
           C. FLORES
           EDITORS:
           K. KUMMERLE
           J.O. LIMB
           F.A. TOBAGI

PUBLISHER IEEE PRESS
DATE OF PUBLICATION 1987
PAGE NUMBER 190 - 205
FILE # can be accessed upon request

SUBJECT MODELING OF COMPUTER
         COMMUNICATION SYSTEMS

TITLE   "Optic Fibers in Local Area Networks"
         in LOCAL AREA NETWORKS

AUTHOR(S) M.R. FINLEY JR.
           EDITORS:
           K. KUMMERLE
           J.O. LIMB
           F.A. TOBAGI

PUBLISHER IEEE PRESS
DATE OF PUBLICATION 1987
PAGE NUMBER 224 - 243
FILE # can be accessed upon request

SUBJECT   MODELING OF COMPUTER
           COMMUNICATION SYSTEMS

TITLE   "A Distributed Experimental
           Communication System" in LOCAL AREA
           NETWORKS

AUTHOR(S) J.D. DETREVILLE
           W.D. SINCOSKIE
           EDITORS:
           K. KUMMERLE
           J.O. LIMB
           F.A. TOBAGI

PUBLISHER   IEEE PRESS
DATE OF PUBLICATION 1987
PAGE NUMBER   533 - 542
FILE #   can be accessed upon request

SUBJECT   MODELING OF COMPUTER
           COMMUNICATION SYSTEMS

TITLE   SIMNET NETWORK PERFORMANCE

           BBN REPORT 6711

AUTHOR(S) D. FRIEDMAN
           V. HAIMO

PUBLISHER   BBN COMMUNICATIONS CORP.,
DATE OF PUBLICATION JAN. 1988
PAGE NUMBER
FILE #   can be accessed upon request

SUBJECT   MODELING OF COMPUTER
COMMUNICATION SYSTEMS

TITLE   DATA NETWORKS

AUTHOR(S)   D. BERTSEKAS
R. GALLAGER

PUBLISHER   PRENTICE HALL

DATE OF PUBLICATION   1987

PAGE NUMBER

FILE #   can be accessed upon request

SUBJECT   MODELING OF COMPUTER
COMMUNICATION SYSTEMS

TITLE   SIMULATION MODELING AND SIMNET

AUTHOR(S)   H.A. TAHA

PUBLISHER   PRENTICE HALL

DATE OF PUBLICATION   1988

PAGE NUMBER

FILE #   can be accessed upon request

SUBJECT   MODELING OF COMPUTER
                 COMMUNICATION SYSTEMS

TITLE   "Carrier Sense Multiple Access with
               Collision Detection (CSMA/CD) Access
               Method and Physical Layer
               Specification" ANSI/IEE -
               INTERNATIONAL STANDARD 8802/3

AUTHOR(S)

PUBLISHER   IEEE COMPUTER SOCIETY PRESS

DATE OF PUBLICATION   1985

PAGE NUMBER

FILE #   can be accessed upon request

SUBJECT   MODELING OF COMPUTER
                 COMMUNICATION SYSTEMS

TITLE   "Token-Passing Bus Access Method"
               ANSI/IEE - DRAFT INTERNATIONAL
               STANDARD ISO/DIS 8802/4

AUTHOR(S)

PUBLISHER   IEEE COMPUTER SOCIETY PRESS

DATE OF PUBLICATION   1985

PAGE NUMBER

FILE #   can be accessed upon request

SUBJECT MODELING OF COMPUTER
         COMMUNICATION SYSTEMS

TITLE   "SIMNET ETHERNET Performance" BBN
         TECHNICAL REPORT No 6711

AUTHOR(S) D. FRIEDMAN
           V. HAIMO

PUBLISHER   BBN COMMUNICATIONS CORP. MA
DATE OF PUBLICATION 1988
PAGE NUMBER
FILE #   can be accessed upon request

SUBJECT MODELING OF COMPUTER
         COMMUNICATION SYSTEMS

TITLE   DATA COLLECTION AND ANALYSIS: THE
         KEYS FOR INTERACTIVE TRAINING FOR
         COMBAT READINESS

AUTHOR(S) R. GARVEY
           T. RADGOWSJKI

PUBLISHER   PROCEEDINGS OF I/ITSC CONFERENCE
DATE OF PUBLICATION 1988
PAGE NUMBER   572 - 576
FILE #   can be accessed upon request

SUBJECT   MODELING OF COMPUTER
           COMMUNICATION SYSTEMS
TITLE   "Concurrent C" TECHNICAL REPORT

AUTHOR(S) N. GEHANI
           W. ROOME

PUBLISHER   AT & T BELL LABORATORIES
DATE OF PUBLICATION 1986
PAGE NUMBER
           FILE #   can be accessed upon request

SUBJECT   MODELING OF COMPUTER
           COMMUNICATION SYSTEMS
TITLE   "Benchmarking LAN Protocol
           Analyzers"PROCEEDINGS OF 13th IEEE
           CONFERENCE ON LOCAL COMPUTER
           NETWORKS

AUTHOR(S) J. HAUGDAHL

PUBLISHER
DATE OF PUBLICATION 1988
PAGE NUMBER   375 - 384
FILE #   can be accessed upon request

SUBJECT   MODELING OF COMPUTER
            COMMUNICATION SYSTEMS
TITLE   STRUCTURED CONCURRENT
            PROGRAMMING WITH OPERATING SYSTEM
            APPLICATIONS

AUTHOR(S)   R. HOLT ET.AL

PUBLISHER   ADDISON-WESLEY, READING MA
DATE OF PUBLICATION 1978
PAGE NUMBER
FILE #   can be accessed upon request

SUBJECT   MODELING OF COMPUTER
            COMMUNICATION SYSTEMS
TITLE   THE C PROGRAMMING LANGUAGE

AUTHOR(S)   B. KERNIGHAN
            D. RITCHIE

PUBLISHER   PRENTICE-HALL
DATE OF PUBLICATION 1978
PAGE NUMBER
FILE #   can be accessed upon request

SUBJECT   MODELING OF COMPUTER
          COMMUNICATION SYSTEMS
TITLE   "First FDDI Local Area Network"
          PROCEEDINGS OF 12th IEEE CONFERENCE
          ON LOCAL COMPUTER NETWORKS

AUTHOR(S)   I. KOLNIK
            J. GARODNICK

PUBLISHER
DATE OF PUBLICATION   1987
PAGE NUMBER   7 - 11
FILE #   can be accessed upon request

SUBJECT   MODELING OF COMPUTER
          COMMUNICATION SYSTEMS
TITLE   COMPUTER PERFORMANCE MODELING
          HANDBOOK

AUTHOR(S)   S. LAVENBERG

PUBLISHER   ACADEMIC PRESS
DATE OF PUBLICATION   1983
PAGE NUMBER
FILE #   can be accessed upon request

SUBJECT	MODELING OF COMPUTER COMMUNICATION SYSTEMS
TITLE	"The SIMNET Network and Protocols" BBN Report No. 7102

AUTHOR(S)   ARTHUR POPE

PUBLISHER	BBN COMMUNICATIONS CORP., MA
DATE OF PUBLICATION	JULY 1989
PAGE NUMBER	
FILE #	can be accessed upon request

SUBJECT	MODELING OF COMPUTER COMMUNICATION SYSTEMS
TITLE	"The SIMNET Network and Protocols" BBN Report No. 6369

AUTHOR(S)   ARTHUR POPE

PUBLISHER	BBN COMMUNICATIONS CORP., MA
DATE OF PUBLICATION	FEBRUARY 1987
PAGE NUMBER	
FILE #	can be accessed upon request

SUBJECT   MODELING OF COMPUTER
COMMUNICATION SYSTEMS

TITLE   INTRODUCTION TO SIMULATION AND
SLAM II (2nd edition)

AUTHOR(S)   A. PRITSKER

PUBLISHER   SYSTEMS PUBLISHING CORP., WEST

DATE OF PUBLICATION   1984

PAGE NUMBER

FILE #   can be accessed upon request

SUBJECT   MODELING OF COMPUTER
COMMUNICATION SYSTEMS

TITLE   "SHIPNET: A Real-Time Local Area
Network For Ships" PROCEEDINGS OF
13th IEEE CONFERENCE ON LOCAL
COMPUTER NETWORKS

AUTHOR(S)   R. SIMONSON et al

PUBLISHER

DATE OF PUBLICATION   1988

PAGE NUMBER   424 - 432

FILE #   can be accessed upon request

APPENDIX B

```
Welcome to DIALOG
Dialog level 21.02.9B


Last   logoff   02oct89 14:27:51
Logon file001 04oct89 09:56:59
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        >>>     of new databases, price changes, etc.      <<<
        >>>       Announcements last updated 29sep89        <<<


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File   1:ERIC - 66-89/AUG.


       Set   Items   Description
       ---   -----   -----------
? b 6
       04oct89 09:57:19 User201554 Session B26.1
               $0.30     0.010 Hrs File1
       $0.30   Estimated cost File1
       $0.12   Tymnet
       $0.42   Estimated cost this search
       $0.42   Estimated total session cost   0.010 Hrs.


File   6:NTIS - 64-89/ISS20
          (COPR. 1989 NTIS)


       Set   Items   Description
       ---   -----   -----------
? s parallel(w)programming? or distributed(w)processing?
           17357   PARALLEL
           46534   PROGRAMMING?
             174   PARALLEL(W)PROGRAMMING?
           11575   DISTRIBUTED
          109155   PROCESSING?
             617   DISTRIBUTED(W)PROCESSING?
       S1              787       PARALLEL(W)PROGRAMMING?      OR
DISTRIBUTED(W)PROCESSING?
? s s1 and py=1986:1989
             787   S1
          182147   PY=1986 : PY=1989
       S2     337   S1 AND PY=1986:1989
```

? t /6/all

2/6/1
1407258 DE89012297/XAB
  Structured Command History for UNIX Using a Parallel
Distributed Processing Model
  (Thesis (M.S.))
  Portions of this document are illegible in microfiche
products.
  NTIS Prices: PC A05/MF A01

2/6/2
1406419 AD-A209 401/9/XAB
  International Conference on Vector and Parallel Computing
(2nd)
  NTIS Prices: PC A03/MF A01

2/6/3
1406150 AD-A209 132/0/XAB
  Parallel Vision Algorithms
  (Annual technical rept. no. 2, 1 Oct 87-28 Dec 88)
  NTIS Prices: PC A05/MF A01

2/6/4
1405739 PB89-866917/XAB
  Computer Networks: Data Communication Architecture and
Development.
January 1975-July 1989 (Citations from the INSPEC: Information
Services for the Physics and Engineering Communities Database)

  (Rept. for Jan 75-Jul 89)
  NTIS Prices: PC N01/MF N01

2/6/5
1405071 N89-23373/8/XAB
  Decentralization of Databases and the Communication between
Them
  NTIS Prices: (Order as N89-23362/1, PC A06/MF A01)

2/6/6
1405007 N89-23183/1/XAB
  Specifying Real-Time Systems with Interval Logic
  (Final Report)
  NTIS Prices: PC A05/MF A01

2/6/7
1405004 N89-23073/4/XAB
  Implementing Nested Conditional Statements in SIMD
(Single Instruction Multiple Data) Machines
  (Final Report)
  NTIS Prices: PC A03/MF A01

2/6/8
1403583 AD-A208 271/7/XAB

Parallel Vision Algorithms
(Annual technical rept. no. 1, 1 Oct 86-30 Sep 87)
NTIS Prices: PC A04/MF A01

2/6/9
1403124 N89-22358/0/XAB
DeMAID: A   Design   Manager's   Aide   for   Intelligent
Decomposition User's Guide
NTIS Prices: PC A03/MF A01

2/6/10
1402924 ED-303 177
Technology Options for Libraries. ERIC Digest
Available   from   ERIC   Document   Reproduction   Service
(Computer Microfilm
International Corporation), 3900 Wheeler Ave., Alexandria, VA
22304-5110.
NTIS Prices: Not available NTIS

2/6/11
1400748 PB89-184360/XAB
Methodology   for   the   Design   of   Comtinuous-Dataflow
Synchronous Systems   (Technical rept.)
NTIS Prices: PC A03/MF A01

2/6/12
1400638 N89-21542/0/XAB
Parallel   Solution   of   Sparse   One-Dimensional   Dynamic
Programming Problems   (Final Report)
NTIS Prices: PC A03/MF A01

2/6/13
1400633 N89-21537/0/XAB
Language   Comparison   for   Scientific   Computing   on   MIMD
Architectures   (Final Report)
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2/6/14
1399531 AD-A207 609/9/XAB
Implementation Indices (1975-1979). Volume 1
(Technical rept.)
NTIS Prices: PC A08/MF A01

2/6/15
1399489 AD-A207 567/9/XAB
Real-Time Signal Processing Data Acquisition Subsystem
(Journal article)
NTIS Prices: PC A03/MF A01

2/6/16
1398122 N89-20638/7/XAB
Run-Time Scheduling and Execution of Loops on Message
Passing Machines   (Final Report)
NTIS Prices: PC A03/MF A01

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1398121   N89-20637/9/XAB
  Optimal   Feedback   Control   Infinite   Dimensional
Parabolic   Evolution Systems: Approximation Techniques
  (Final Report)
  NTIS Prices: PC A04/MF A01

2/6/18
1396042   AD-A206 657/9/XAB
  Lexical Analysis on a Moderately Sized Multiprocessor
  (Technical rept.)
  NTIS Prices: PC A03/MF A01

2/6/19
1395831   TIB/B89-80939/XAB
  Graphenalgorithmen   fuer   MIMD-Rechner.   (Graph
algorithms   for   MIMD (Multiple-Instruction-Stream, Multiple
Data Stream) processors)
  (Diploma Thesis)
  NTIS Prices: PC E11

2/6/20
1395803   TIB/B89-80904/XAB
  Fairness in parallel programs: The transformational approach

  NTIS Prices: PC E09

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1394837   N89-19830/3/XAB
  Artificial   Intelligent   Decision   Support   for   Low-Cost
Launch Vehicle Integrated Mission Operations
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1394836   N89-19829/5/XAB
  CIRCA 2000 Operations Criteria
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1393513   DE88015374/XAB
  Automated   COBOL   Code   Generation   for SNAP-I (Shipboard
Nontactical ADP Program) CAI (Computer Aided Instruction)
Development and Maintenance
Procedures
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2/6/24
1393174   AD-A206 371/7/XAB
  Heuristics for Cooperative Problem Solving
  (Final rept.)
  NTIS Prices: PC A04/MF A01

2/6/25
1391131 N89-18601/9/XAB
  Study   of Communication Options in a Distributed Data
Handling System and Survey   of Advanced Man Machine
Communication Schemes, Work Package 2.1 and 2.2   (Final
Report)
  NTIS Prices: PC A04/MF A01

2/6/26
1391044 N89-18479/0/XAB
  Task Interactions in Distributed Machines of Embedded
Computer Systems
  NTIS Prices: (Order as N89-18446/9, PC A18/MF A01)

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1391041 N89-18476/6/XAB
  Definitions and Requirements for Distributed Real-Time
Systems NTIS Prices: (Order as N89-18446/9, PC A18/MF A01)

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1391023 N89-18458/4/XAB
  Debugging Distributed Ada Avionics Software
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1391020 N89-18455/0/XAB
  Embedding Formal Methods in SAFRA
  NTIS Prices: (Order as N89-18446/9, PC A18/MF A01)

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Mission Software Development
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1391014 N89-18449/3/XAB
  Software Productivity through Ada Engines
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1389945 DE89001134/XAB
  PCP (Parallel C Preprocessor): A Parallel Extension of C
That Is 99% Fat Free
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1388857 AD-A205 406/2/XAB
  Three Short Papers on Language and Connectionism
  (Technical rept.)
  NTIS Prices: PC A03/MF A01

2/6/34
1387880 N89-12255/0/XAB
  Study of the Deveopment of On-Board Distributed Software
Systems Using Ada
  NTIS Prices: PC A04/MF A01

2/6/35
1387870 N89-12222/0/XAB
  Support   Architecture   for   Reliable   Distributed
Computing Systems.
Semiannual Status Report, June 9, 1987-June 8, 1988
  NTIS Prices: PC A03/MF A01

2/6/36
1385855 N89-18098/8/XAB
  CO-OP Method: A Method for Compositional Derivation of
Canonical Testers (M.S. Thesis)
  NTIS Prices: PC A05/MF A01

2/6/37
1385854 N89-18097/0/XAB
  High   Level   Synchronization   Services   of   OSI
(Open Systems Interconnection): Commitment, Concurrency and
Recovery
  NTIS Prices: PC A03/MF A01

2/6/38
1383265 N89-17422/1/XAB
  Parallel Gaussian Elimination of a Block Tridiagonal
Matrix Using Multiple Microcomputers
  NTIS Prices: PC A03/MF A01

2/6/39
1381250 AD-A204 126/7/XAB
  QLISP for Parallel Processors
  (Final rept. 15 Jul 86-31 Jul 88)
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1380067 N89-16371/1/XAB
  Database Management Capability for Ada
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  Using Ada to Implement the Operations Management System in
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Distributable APSE (Ada Program Support Environment)
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Distributing Program Entities in Ada
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  Distributed Programming Environment for Ada
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  Testability of Ada Programs
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1379975   N89-16279/6/XAB
  First   International   Conference   on   Ada   (R)
Programming Language Applications for the NASA (National
Aeronautics and Space Administration) Space Station, Volume
1
  NTIS Prices: PC A18/MF A01

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1379928   N89-15972/7/XAB
  Transportation Node Space Station Conceptual Design
  NTIS Prices: PC A10/MF A01

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1379661   DE89005619/XAB
  Floating Point Engine for Lattice Gauge Calculations
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2/6/57
1378569   AD-A203 982/4/XAB
  Performance   Evaluation   of   Parallel   Algorithms   and
Architectures in Concurrent Multiprocessor Systems
  (Final rept. Jan-Sep 87)
  NTIS Prices: PC A03/MF A01

2/6/58
1377891   TIB/B89-80016/XAB
  Einsatz   des   OCCAM/Transputerkonzepts   als   busloses
Multiprozessorsystem fuer   einen   digitalen   Regler.
(Application of the OCCAM/transputer conception as busless
multiprocessor system in a digital controller)
  NTIS Prices: PC E09

2/6/59
1377085   N89-15601/2/XAB
  Very   Large   Area   Network   (VLAN)   Knowledge-Base
Applied to Space Communication Problems
  NTIS Prices: (Order as N89-15549/3, PC A21/MF A01)

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1373911   AD-A203 087/2/XAB

Virtual Time Machine
(Technical rept.)
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1372087   N89-14946/2/XAB
Resident Database Interfaces to the DAVID System, a
Heterogeneous Distributed Database Management System
(Final Report)
NTIS Prices: PC A03/MF A01

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1372001   N89-14695/5/XAB
Analysis of FDDI Synchronous Traffic Delays
NTIS Prices: PC A03/MF A01

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1369604   PB89-150296/XAB
Distributed-Feedback Laser-Diode Module with an Optical
Isolator for Multigigabit Optical Transmission
Included in Mitsubishi Denki Giho, v62 n10 p77-80 1988.
NTIS Prices: (Order as PB89-150221, PC E05/MF A01)

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NTIS Prices: PC E05/MF A01

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1369112   N89-13991/9/XAB
Strategy   for   Reducing   Turnaround   Time   in Design
Optimization Using a Distributed Computer System
NTIS Prices: PC A02/MF A01

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1369107   N89-13975/2/XAB
Using   Data   Tagging   to   Improve   the   Performance   of
Kanerva's Sparse Distributed Memory
NTIS Prices: PC A03/MF A01

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1368737   N89-12938/1/XAB
Automatic   Control   of   a   Multi-Channel   Millimeter   Wave
Radiometer   NTIS Prices: (Order as N89-12936/5, PC A99/MF
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1365726   N89-13214/6/XAB
Two Alternate Proofs of Wang's Lune Formula for Sparse
Distributed Memory and an Integral Approximation
NTIS Prices: PC A03/MF A01

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1365721   N89-13173/4/XAB

European Seminar on Neural Computing
NTIS Prices: PC A03/MF A01

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1364167   AD-A201 042/9/XAB
   Operating Environment for the Jellybean Machine
   (Memorandum rept.)
   NTIS Prices: PC A08/MF A01

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1361012   N89-11438/3/XAB
   Sopmcr: An Operating System for the Multiprocessor for
Communication Networks
   NTIS Prices: PC A12/MF A01

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1361011   N89-11429/2/XAB
   Parallelizing Recursive Programs
   NTIS Prices: PC A03/MF A01

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1360975   N89-11287/4/XAB
   CSM   (Computational   Structural   Mechanics)   Testbed
Software System: A Development   Environment for Structural
Analysis   Methods   on   the   NAS (Numerical Aerodynamic
Simulator) Cray-2
   NTIS Prices: PC A03/MF A01

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1360264   DE88016468/XAB
   BLAZE   Family   of   Languages: Programming   Environments
for Shared and Distributed Memory Architectures
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1358578   PB89-116859/XAB
   Langage   Modulaire   de   Specifications   de   Programmes
Paralleles et Sa Compilation (These) (Modular Language of
Parallel Program Specifications and Its Compilation)
   NTIS Prices: PC E10/MF E10

2/6/76
1358316   N89-10216/4/XAB
   High   Speed   Fiber Optics Local Area Networks: Design and
Implementation. Final Report, January 1, 1984-December 31,
1987
   NTIS Prices: PC A02/MF A01

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1358248   N89-10096/0/XAB
   Advanced   Data   Management   Design   for Autonomous
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  Hierarchically Distributed Architecture for Fault
Isolation Expert Systems on the Space Station
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1356758 PB89-122394/XAB
  GRAMPS (General Real-Time Asynchronous Multiprocessor
System) Operating System: User's Guide
  NTIS Prices: PC A03/MF A01

  2/6/80
1356433 PB89-116388/XAB
  Platinum Jubilee Conference on Systems and Signal
Processing. Held at Bangalore, India on December 11-13, 1986
  NTIS Prices: PC E15/MF A01

  2/6/81
1356360 PB89-115349/XAB
  Languages and Methods for the Interface I1
  NTIS Prices: PC E03/MF E03

  2/6/82
1356357 PB89-115315/XAB
  ESPRIT SPAN Project: A Kernel System for Integrating
Parallel Symbolic and Numeric Processing (Technical rept.)
  NTIS Prices: PC E05/MF E05

  2/6/83
1356037 N88-30350/8/XAB
  Parallel and Distributed Computation for
Fault-Tolerant Object Recognition
  NTIS Prices: (Order as N88-30330/0, PC A19/MF A01)

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1356011 N88-30321/9/XAB
  Performance Analysis of FDDI (Fiber Distributed Data
Interface)
  NTIS Prices: PC A03/MF A01

  2/6/85
1355342 NTN88-0747
  Bibliography on Multiprocessors and Distributed
Processing: This computerized data base yields citations,
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  FOR ADDITIONAL INFORMATION: Contact: COSMIC 112 Barrow
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Refer to ARC-11568/TN.
  NTIS Prices: Not available NTIS

2/6/86
1354072   AD-A199 271/8/XAB
   United States Air Force Program Office Guide to Ada
   (4th Edition)
   NTIS Prices: PC A05/MF A01

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1353917   PB89-851109/XAB
   Microcomputer Hardware Standards: Extended Industry Standard
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   NTIS Prices: PC N01/MF N01

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1353023   N88-29425/1/XAB
   Networking   and   AI   (Artificial   Intelligence)   Systems:
Requirements and Benefits (Abstract Only)
   NTIS Prices: (Order as N88-29351/9, PC A99/MF E04)

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1353013   N88-29415/2/XAB
   Design   Consideration   in   Constructing   High
Performance Embedded Knowledge-Based Systems (KBS)
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   Expert System for a Distributed Real-Time Trainer
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   AI   (Artificial   Intelligence)   and   Simulation: What Can
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1352984   N88-29386/5/XAB
   Distributed Cooperating Processes in a Mobile Robot Control
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1352226   DE88013609/XAB
   Tools   to   Aid   in   the   Analysis   of   Memory   Access
Patterns for Fortran Programs: LAPACK Working Note No. 6
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   NTIS Prices: PC A03/MF A01

2/6/95
1348416   AD-A198 201/6/XAB
  Information Processing Research   (Final rept. Jan 85-Sep
87)
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1347904   PB88-253299/XAB
  Data Management for Integrated Control Systems
  Included in Fuji Electric Jnl., v61 n6 p414-418 1988.
  NTIS Prices: (Order as PB88-253281, PC E04/MF A01)

2/6/97
1347313   PB88-245196/XAB
  Database Snapshots: A Mechanism for Replication of Data
in Distributed Databases
  NTIS Prices: PC E08/MF E08

2/6/98
1345026   AD-A197 197/7/XAB
  Parallel Debugging Using Graphical Views   (Technical rept.)

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2/6/99
1344933   AD-A197 103/5/XAB
  Voyeur: Graphical Views of Parallel Programs   (Technical
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  NTIS Prices: PC A03/MF A01

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1344931   AD-A197 101/9/XAB
  Experiences with POKER
  NTIS Prices: PC A03/MF A01

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1344386   PB88-242250/XAB
  Distributed Programming with Shared Data
  NTIS Prices: PC E03/MF A01

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1344375   PB88-242144/XAB
  Programming Languages for Distributed Systems
  NTIS Prices: PC E04/MF A01

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1344015   N88-26823/0/XAB
  Correctness Criteria for Process Migration
  NTIS Prices: PC A03/MF A01

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1342170   AD-A196 931/0/XAB
  Parallel Programming Paradigms   (Doctoral thesis)

NTIS Prices: PC A07/MF A01

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1341664   AD-A196 419/6/XAB
  Poker (4.1): A Programmer's Reference Guide   (Technical
rept.)
  NTIS Prices: PC A05/MF A01

2/6/106
1341661   AD-A196 416/2/XAB
  Type Architectures, Shared Memory and the Corollary of
Modest Potential   (Technical rept.)
  NTIS Prices: PC A03/MF A01

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1341275   PB88-868625/XAB
  DECNET: Digital   Equipment   Corporation   Network
Architecture. January 1976-September 1988 (Citations from
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  NTIS Prices: PC N01/MF N01

2/6/108
1340814   PB88-234927/XAB
  Introduction to CSP (Communicating Sequential Processes)
  (Technical rept.)
  NTIS Prices: PC E04/MF E04

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1339597   AD-A196 133/3/XAB
  Exploiting Replication   (Special rept.)
  NTIS Prices: PC A04/MF A01

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1339013   AD-A195 520/2/XAB
  TAC-1: A Knowledge-Based Air Force Tactical Battle
Management Testbed   (Interim rept. Oct 86-Sep 87)
  NTIS Prices: PC A05/MF A01

2/6/111
1337246   AD-A195 395/9/XAB
  ACCESS: A Communicating and Cooperating Expert Systems
System
  (Final rept. 30 Jun 87-31 Jan 88)
  NTIS Prices: PC A06/MF A01

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1335868   PB88-221056/XAB
  Ship Performance Monitoring System Development   (Final
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  NTIS Prices: PC A09/MF A01

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1335651   N88-24206/0/XAB

Aerospace Energy Systems Laboratory: Requirements and Design
Approach
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1335646 N88-24199/7/XAB
  Mentat: An Object-Oriented Macro Data Flow System
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1335640 N88-24193/0/XAB
  TALOS (Telemetry Analysis Logic for Operating Spacecraft):
A Distributed Architecture for Intelligent Monitoring and
Anomaly Diagnosis of the Hubble Space Telescope
  NTIS Prices: (Order as N88-24188/0, PC A04/MF A01)

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1335635 N88-24188/0/XAB
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1333254 N88-23436/4/XAB
  Very Simple Construction for Atomic Multiwriter Register
  NTIS Prices: PC A02/MF A01

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1332983 N88-23083/4/XAB
  Strategies for Concurrent Processing of Complex Algorithms
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1332768 DE88008019/XAB
  Graphical Multiprocessing Analysis Tool (GMAT)
  NTIS Prices: PC A03/MF A01

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1332523 AD-A194 128/5/XAB
  Cauldrons: An Abstraction for Concurrent Problems Solving.
Revision   (Memorandum rept.)
  NTIS Prices: PC A03/MF A01

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1332082 AD-A193 681/4/XAB
  Programming   N-Cubes   with   a   Graphical   Parallel
Programming Environment Versus an Extended Sequential Language

  (Technical rept.)
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1332050 AD-A193 648/3/XAB
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  NTIS Prices: PC A03/MF A01

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1331894 AD-A193 465/2/XAB
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  (Interim rept.)
  NTIS Prices: PC A03/MF A01

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1331892 AD-A193 463/7/XAB
  Force. (Parallel Programming Language)   (Interim rept.)
  NTIS Prices: PC A03/MF A01

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1331037 PB88-203997/XAB
  Distributed Application Programming with Extended Prolog
(Distribuerad Applikationsprogrammering med Utvidgad Prolog)
  NTIS Prices: PC E03/MF A01

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1330891 N88-22589/1/XAB
  Colored   Stochastic   Petri   net   (Cs-Pn)   Software:
Application to the Validation and the Performance Evaluation
of Distributed Systems
  NTIS Prices: PC A03/MF A01

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1330817 N88-22399/5/XAB
  Computational Structural Mechanics for Engine Structures
  NTIS Prices: (Order as N88-22382/1, PC A14/MF A01)

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1330042 AD-A193 466/0/XAB
  Comparing Barrier Algorithms   (Interim rept.)
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1329891 AD-A193 298/7/XAB
  Hearts: A Dialect of the Poker Programming Environment
Specialized to Systolic Computation   (Technical rept.)
  NTIS Prices: PC A02/MF A01

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1329890 AD-A193 297/9/XAB
  Poker   on   the   Cosmic   Cube: The First Retargetable
Parallel Programming Language and Environment   (Technical
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  NTIS Prices: PC A03/MF A01

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1329888 AD-A193 295/3/XAB
  Programming Solutions to the Algorithm Contraction Problem
  (Technical rept.)
  NTIS Prices: PC A02/MF A01

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1329298 PB88-211156/XAB
  Architecture   for   Distributed   Data   Management   in
Computer Integrated Manufacturing
  NTIS Prices: PC A04/MF A01

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1329055 PB88-201769/XAB
  Optimal Database Allocation in Distributed Computer Network
Systems   Included in Mitsubishi Denki Giho, v61 n12 p26-29
1987.
  NTIS Prices: (Order as PB88-201751, PC E04/MF A01)

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1328768 N88-21841/7/XAB
  Optimal CMOS Structure for the Design of a Cell Library
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1328685 N88-21709/6/XAB
  Technology Mapping from Boolean Expressions to Standard
Cells
  (Master's thesis)
  NTIS Prices: PC A04/MF A01

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1328676 N88-21696/5/XAB
  Proposta de Um Sistema Paralelo Com Aplicacoes Em
Processamento de Imagens (Proposal for a Parallel System with
Image Processing Applications)
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1328674 N88-21694/0/XAB
  Conception of a Knowledge-Based System for Designing
Distributed Systems   (Thesis)
  NTIS Prices: PC A10/MF A01

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1328670 N88-21688/2/XAB
  Distributed Operating Systems: An Overview

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1328650   N88-21659/3/XAB
    ESKISS: A Program for Optimal State Assignment
    (Master's thesis)
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1328649   N88-21658/5/XAB
    Generating Layouts for Random Logic: Cell Generation Schemes

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    Higher Levels of a Silicon Compiler   (Master's thesis)
    NTIS Prices: PC A05/MF A01

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1328498   N88-21396/2/XAB
    GADL: A Gate Array Description Language   (Master's thesis)
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1328156   NTN88-0343
    Position and Force Control for Multiple-Arm Robots: The
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    (NTIS Tech Note)
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1326737   AD-A192 387/9/XAB
    Force User's Manual (Revision)   (Interim rept.)
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1326531   TIB/B88-81046/XAB
    SUPRENUM. Semi-automatic parallelization of Fortran programs

    NTIS Prices: PC E07

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1326261   PB88-865043/XAB
    Computer Networks: Data Communication Architecture and
Development. January   1975-May 1988 (Citations from the
INSPEC: Information Services for the Physics and Engineering

Communities Database)   (Rept. for Jan 75-May 88)
   NTIS Prices: PC N01/MF N01

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1325709   N88-21082/8/XAB
   German Processing and Archiving Facility for ERS-1
   (Final Report)
   NTIS Prices: PC A12/MF A01

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1325659   N88-20892/1/XAB
   Amoeba Replicated Service Organisation
   NTIS Prices: PC A02/MF A01

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1325650   N88-20875/6/XAB
   GM: A Gate Matrix Layout Generator   (Master's thesis)
   NTIS Prices: PC A04/MF A01

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1325649   N88-20874/9/XAB
   Two Normal Form Theorems   for Communicating Sequential
Processes (CSP) Program
   NTIS Prices: PC A03/MF A01

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1325647   N88-20872/3/XAB
   Designing Equivalent Semantic Models for Process Creation
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1325518   N88-20549/7/XAB
   Gridless Routing for Generalized Cell Assemblies: Report and
User Manual
   NTIS Prices: PC A03/MF A01

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1323071   PB88-188446/XAB
   Issues and Recommendations Associated with Distributed
Computation and Data Management Systems for the Space Sciences

   NTIS Prices: PC A06/MF A01

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1321989   DE88006223/XAB
   Activities and Operations of the Advanced Computing
Research Facility, October 1986-October 1987
   NTIS Prices: PC A03/MF A01

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1321572   AD-A191 432/4/XAB
   Year of Programming   (Final technical rept.)
   NTIS Prices: PC A04/MF A01

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1321242   AD-A191 094/2/XAB
  Proceedings from the Workshop on Large-Grained Parallelism
(2nd) Held in Hidden Valley, Pennsylvania on October 11-14,
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  (Final rept.)
  NTIS Prices: PC A06/MF A01

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  UNIX Based Programming Tools for Locally Distributed Network
Applications   (Master's thesis)
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1321087   AD-A190 936/5/XAB
  Proceedings   of   the   National   Conference on Ada (trade
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VA
  NTIS Prices: PC A99/MF A01

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1320158   N88-19147/3/XAB
  Distributed   Computation   of   Graphics   Primitives   on   a
Transputer Network
  NTIS Prices: PC A02/MF A01

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1320048   N88-18794/3/XAB
  Design   and   Implementation   of the Technical Facilities
Controller (TFC) for the Goldstone Deep Space Communications
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1319646   DE88005815/XAB
  DIME   (Distributed   Irregular   Mesh   Environment):   A
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on   a   Distributed-Memory   Parallel   Processor
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1318792   AD-A190 630/4/XAB
  Programming Environments for Systolic Arrays   (Technical
rept.)
  NTIS Prices: PC A03/MF A01

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1318555   AD-A190 383/0/XAB
  MultiScheme: A Parallel Processing System Based on MIT
(Massachusetts Institute of Technology) Scheme   (Doctoral
thesis)

NTIS Prices: PC A11/MF A01

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1318554   AD-A190 382/2/XAB
  Argus Reference Manual   (Technical rept.)
  NTIS Prices: PC A08/MF A01

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1318350   AD-A190 171/9/XAB
  Automated   Interactive   Simulation   Model   (AISIM) VAX
Version 5.0 User's Manual   (Final rept. 14 May 86-15 May 87)
  NTIS Prices: PC A17/MF A01

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Routing Using Simulated Annealing
  NTIS Prices: PC A04/MF A01

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1315702   AD-A189 856/8/XAB
  Mobile Remote Manipulator System Simulator
  NTIS Prices: PC A02/MF A01

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  Implementation of a Distributed Adaptive Routing Algorithm
on the Intel iPSC (Intel Personal Super-Computer)   (Master's
thesis)
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1315545   AD-A189 697/6/XAB
  Architecture of MRMS Simulation: Distributing Processes
  NTIS Prices: PC A02/MF A01

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1314503   PB88-162862/XAB
  Duality of Fault Tolerant System Structures
  NTIS Prices: PC E03/MF E03

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1314374   N88-17326/5/XAB
  Implementation   and   Use   of   Ada   on   Distributed
Systems with High Reliability Requirements. Annual Progress
Report, January 1, 1987-February 14, 1988
  NTIS Prices: PC A03/MF A01

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1314371   N88-17312/5/XAB
  Systeme   de   Programmation   Parallele   Occam/Ada
(Occam/Ada Parallel Programming System)   (Doctoral thesis)
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  Software for Integrated Manufacturing Systems, Part 1
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1314284 N88-17206/9/XAB
  First Annual Workshop on Space Operations Automation and
Robotics (SOAR 87)
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1312882 AD-A189 569/7/XAB
  Why We Can't Program Multiprocessors the Way We're Trying
to Do It Now   (Technical rept.)
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1312569 AD-A189 245/4/XAB
  Interface between Object-Oriented Systems   (Technical
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1312531 AD-A189 202/5/XAB
  Design of the CONSUL Programming Language   (Technical rept.)
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1311249 N88-16576/6/XAB
  Proposta de Uma Metodologia Para O Projeto Conceitual de Bancos de Dados Distribuidos (Proposal of a Methodology for the Conceptual Design of the Distributed Data Base) (Master's thesis)   NTIS Prices: PC A09/MF A01

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1311169 N88-16442/1/XAB
  Prototype Space Station Automation System Delivered and Demonstrated at NASA (National Aeronautics and Space Administration)
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1311167 N88-16440/5/XAB
  Framework   for   Real-Time Distributed Expert Systems: On-Orbit Spacecraft Fault Diagnosis, Monitoring and Control
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  Neural Network Based Speech Synthesizer: A Preliminary Report
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  Application of Parallel Distributed Processing to Space Based Systems
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1311087 N88-16360/5/XAB
  Third   Conference on Artificial Intelligence for Space
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1310087 DE88003582/XAB
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1308401 PB88-162896/XAB
  Objects and Actions in Reliable Distributed Systems
  (Technical rept.)
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1308115 PB88-159223/XAB
  Mitsubishi Denki Giho, Vol. 61, No. 10, 1987
  NTIS Prices: PC E04

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1307787 N88-15731/8/XAB
  Interface   between   Astrophysical   Datasets   and
Distributed Database Management Systems (DAVID)   (Progress
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  NTIS Prices: PC A03/MF A01

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1307775 N88-15635/1/XAB
  Expert System Development for Commonality Analysis in Space
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Breadboard
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1307587 N88-15114/7/XAB
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Communications Schemes. Work Package 1:   Interprocess
Communication   (Final rept.) NTIS Prices: PC A04/MF A01

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High-Performance Machines
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1306289 AD-A187 824/8/XAB
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Strategies
  (Technical rept.)
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1306288 AD-A187 823/0/XAB
Roll   Back   Chip: Hardware Support for Distributed
Simulation Using Time Warp   (Technical rept.)
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1306285 AD-A187 820/6/XAB
Shared   Memory   Algorithm   and Proof for the Alternative
Construct in CSP (Communicating Sequential Processes)
  (Technical rept.)
  NTIS Prices: PC A03/MF A01

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1305006 N88-14641/0/XAB
Algorithms and Programming Tools for Image Processing on the
MPP:3. Final Report, May 1984-July 1987
  NTIS Prices: PC A09/MF A01

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1302419 N88-13886/2/XAB
Introduction to Local Area Network Design on Ariane
5 and Future Launchers
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1301283 AD-A187 559/0/XAB
Theory and Practice of Fault Tolerance in Distributed
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  (Final rept. 15 Jun 85-14 Oct 86)
  NTIS Prices: PC A03/MF A01

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1301241 AD-A187 516/0/XAB
Advanced Teleprocessing Systems Defense Advanced Research
Projects Agency   (Technical rept. (Final) 1 Oct 81-30 Sep 87)

  NTIS Prices: PC A03/MF A01

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1299807 N88-12934/1/XAB
  Comparing Barrier Algorithms   (Final rept.)
  NTIS Prices: PC A03/MF A01

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1297430 PB88-126693/XAB
  Strongly Sequential Term Rewriting Systems
  NTIS Prices: PC E03/MF A01

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1297257 N88-12287/4/XAB
  Mapping   a   Battlefield   Simulation   onto
Message-Passing Parallel Architectures   (Final rept.)
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1294485 DE88000714/XAB
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  NTIS Prices: PC A03/MF A01

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Environments: 1, A Uniform   Decomposition   and Performance
Analysis for the NCUBE and JPL Mark IIIfp Hypercubes
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  NTIS Prices: PC A03/MF A01

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1293232 AD-A185 616/0/XAB
  Air Force Scientific Report for AFOSR Grant AFOSR-85-0252
  (Final rept. 15 Jun 85-14 Oct 86)
  NTIS Prices: PC A03/MF A01

2/6/216
1293195 AD-A185 579/0/XAB
  Communications for the DTroll Distributed Database System
  (Master's thesis)
  NTIS Prices: PC A03/MF A01

2/6/217
1291994 PB88-105499/XAB
  Multi-Processor Architectures for Artificial Intelligence
Processing
  NTIS Prices: PC E05/MF E05

2/6/218
1291923 N88-11440/0/XAB
  Methodologie d'Evaluation des Performances des Systemes
Repartis en Temps Reel   (Methodology   of   Performance
Evaluation of Real Time Distributed Systems)

NTIS Prices: PC A06/MF A01

2/6/219
1291911 N88-11402/0/XAB
   Report from the MPP (Massively Parallel Processor) Working
Group to the NASA   (National   Aeronautics   and   Space
Administration) Associate Administrator for Space Science
and   Applications. Technical Memorandum Report, October 1,
1985-September 30, 1986
   NTIS Prices: PC A04/MF A01

2/6/220
1291909 N88-11398/0/XAB
   Cache-Based Error Recovery for Shared Memory Multiprocessor
Systems
   NTIS Prices: PC A03/MF A01

2/6/221
1291899 N88-11379/0/XAB
   Systeme   Memoire pour Architecture Multiprocesseur sur
Bus Unique. Application au Systeme SCQM (Memory Systems for
Single Bus Multiprocessor Architecture. Application to the
SCQM System)
   (Doctoral thesis)
   NTIS Prices: PC A11/MF A01

2/6/222
1289457 PB88-110853/XAB
   Summary   Record   of   Presentations   to   the   Federal
Telecommunication Standards Committee/Fiber Optics Task Group
   NTIS Prices: PC A07/MF A01

2/6/223
1289249 PB88-105218/XAB
   Early Stopping Algorithms for Distributed Agreement
under Fail-Stop, Omission, and Timing Fault Types   (Technical
rept. series)
   NTIS Prices: PC E03/MF E03

2/6/224
1289032 N88-10513/5/XAB
   Nonmythical Generalization of Dekker's Algorithm and Its
Ramifications
   NTIS Prices: PC A03/MF A01

2/6/225
1289026 N88-10506/9/XAB
   Associative Memory ME7
   NTIS Prices: PC A04/MF A01

2/6/226
1285508 DE87012519/XAB
   Unified Approach to Parallel Computation: Performance
Evaluation and Architecturally   Independent   Parallel

Programming: Progress   Report, September 1, 1986-August 31,
1987
  NTIS Prices: PC A02/MF A01

 2/6/227
1285013   AD-A184 969/4/XAB
  Test and Evaluation of the Transputer in a Multi-Transputer
System   (Master's thesis)
  NTIS Prices: PC A09/MF A01

 2/6/228
1284195   N87-29173/8/XAB
  Votierungsverfahren   als   Teil   der   Fehlertoleranz
in   Verteilten Pdv-Systemen (Vote Methods as a Part of the
Fault   Tolerance   in   Distribution _ Process   Data   Processing
Systems)
  (Doctoral thesis)
  NTIS Prices: PC A09/MF A01

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1281120   PB87-234969/XAB
  Distributed Infimum Approximation   (Technical rept.)
  NTIS Prices: PC E03/MF A01

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1280257   N87-28325/5/XAB
  Support   Architecture   for Reliable Distributed Computing
Systems. Interim Report, November 9, 1983-December 3, 1985
C" k wi l rept.)
  NTIS Prices: PC A04/MF A01

 2/6/231
1280248   N87-28307/3/XAB
  Performance   Issues   for   Domain-Oriented   Time-Driven
Distributed Simulations
  NTIS Prices: PC A02/MF A01

 2/6/232
1280235   N87-28294/3/XAB
  Ada Pilot Project   (Final rept.)
  NTIS Prices: PC A03/MF A01

 2/6/233
1280017   N87-27894/1/XAB
  Sistema de Comunicacao Para Ambiente de Multiprocessamento
(Communication System for a Multiprocessing Environment)
  NTIS Prices: PC A02/MF A01

 2/6/234
1278782   DE87010832/XAB
  Prescriptive   Concepts   for Advanced Nuclear Materials
Control and Accountability Systems
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NTIS Prices: PC A02/MF A01

2/6/235
1277652   AD-A184 266/5/XAB
Exploiting Virtual Synchrony in Distributed Systems.
Revision
(Special technical rept.)
NTIS Prices: PC A02/MF A01

2/6/236
1277155   PB87-867958/XAB
DECNET: Digital Equipment Corporation Network
Architecture. January 1976-September 1987 (Citations from
the INSPEC: Information Services for the Physics and
Engineering Communities Database)   (Rept. for Jan 76-Sep 87)
NTIS Prices: PC N01/MF N01

2/6/237
1276980   PB87-226098/XAB
Network Protocols: Proceedings of the Joint IBM
(International Business Machines)/University of Newcastle
upon Tyne Seminar Held in the University Computing Laboratory,
September 3-6, 1985
NTIS Prices: PC E12/MF E12

2/6/238
1276525   N87-27444/5/XAB
Automated Problem Scheduling and Reduction of
Synchronization Delay Effects   (Final rept.)
NTIS Prices: PC A03/MF A01

2/6/239
1276515   N87-27433/8/XAB
Detection of Faults and Software Reliability Analysis.
Annual Report, July 1, 1985-June 30, 1987   (Progress rept.)
NTIS Prices: PC A02/MF A01

2/6/240
1276514   N87-27432/0/XAB
Implementation and Use of ADA on Distributed
Systems with High Reliability Requirements. Semiannual
Report, March 5, 1982-February 14, 1988   (Progress rept.)
NTIS Prices: PC A03/MF A01

2/6/241
1276511   N87-27425/4/XAB
Parallel Software Support for Computational
Structural Mechanics. Semiannual Report, December 1, 1986-May
31, 1987
NTIS Prices: PC A02/MF A01

2/6/242
1276506   N87-27420/5/XAB
Parallel Simulated Annealing Algorithm for Standard Cell

Placement on a Hypercube Computer
   NTIS Prices: PC A05/MF A01

  2/6/243
1276504   N87-27418/9/XAB
  Implementation   and   Use   of   ADA   on   Distributed
Systems   with   High Reliability   Requirements.   Semiannual
Report,   March 5, 1982-December 31, 1986
   NTIS Prices: PC A06/MF A01

  2/6/244
1276064   N87-26555/9/XAB
  Experience   in   Highly   Parallel   Processing Using DAP
(Distributed Array Processor)
   NTIS Prices: (Order as N87-26531 PC A13/MF A01)

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1274820   AD-A183 946/3/XAB
  Data Multiplex System (DMS) - Aspects of Fleet Introduction
   NTIS Prices: PC A02/MF A01

  2/6/246
1274207   PB87-867149/XAB
  Distributed   Data   Base   Management   Systems.   October
1984-September   1987   (Citations   from   the   INSPEC:
Information   Services   for   the   Physics   and   Engineering
Communities Database)
   (Rept. for Oct 84-Sep 87)
   NTIS Prices: PC N01/MF N01

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1273956   PB87-219937/XAB
   Replicated Distributed Processing
   (Technical rept. series)
   NTIS Prices: PC E03/MF E03

  2/6/248
1273786   PB87-217592/XAB
   Distributed Computer System for Factory Automation
   Included in Mitsubishi Denki Giho, v61 n4 p17-20 1987.
   NTIS Prices: (Order as PB87-217584, PC E05/MF A01)

  2/6/249
1273334   N87-26581/5/XAB
  Comparison   Between   Sparsely   Distributed   Memory   and
Hopfield-Type Neural Network Models
   NTIS Prices: PC A03/MF A01

  2/6/250
1273332   N87-26577/3/XAB
  EOS: A   Project   to Investigate the Design and Construction
of Real-Time Distributed Embedded Operating Systems. Mid-Year
Report, 1987
   NTIS Prices: PC A11/MF A01

2/6/251
1273331 N87-26576/5/XAB
  Parallel Discrete Event Simulation: A Shared Memory Approach

  NTIS Prices: PC A03/MF A01

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1273329 N87-26574/0/XAB
  PISCES 2 Users Manual
  NTIS Prices: PC A03/MF A01

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1273328 N87-26573/2/XAB
  PISCES 2 Parallel Programming Environment   (Final rept.)
  NTIS Prices: PC A02/MF A01

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1273325 N87-26568/2/XAB
  Network Protocols for Real-Time Applications
  NTIS Prices: PC A02/MF A01

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1273324 N87-26567/4/XAB
  Two Demonstrators and a Simulator for a Sparse, Distributed
Memory
  NTIS Prices: PC A02/MF A01

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1273314 N87-26520/3/XAB
  Force User's Manual (Revised)
  NTIS Prices: PC A03/MF A01

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1273312 N87-26518/7/XAB
  Parallel Algorithm for Channel Routing on a Hypercube
  NTIS Prices: PC A02/MF A01

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1272530 DE87010147/XAB
  Performance of Three Hypercubes
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  NTIS Prices: PC A02/MF A01

2/6/259
1271733 AD-A183 216/1/XAB
  Methodologies for Concurrent Programming
  (Final rept. for 1 Mar 86-28 Feb 87)
  NTIS Prices: PC A02/MF A01

2/6/260
1271456 AD-A182 935/7/XAB
  Parallel and Distributed Computing

(Final rept. 1 Jun 85-30 Nov 86)
NTIS Prices: PC A02/MF A01

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1270513 PB87-200960/XAB
  Bus-Type Home Control System Using Coaxial Cables
  Included   in   National   Technical   Report (Matsushita
Electric Industrial Company), v32 n6 p37-44 Dec 86.
  NTIS Prices: (Order as PB87-200945, PC E07/MF E01)

2/6/262
1270383 N87-25890/1/XAB
  Integration of Communications and Tracking Data Processing
Simulation for Space Station
  NTIS Prices: (Order as N87-25884 PC A13/MF A01)

2/6/263
1269083 AD-A182 557/9/XAB
  Mediation and Automatization
  (Technical rept. for period ending Dec 86)
  NTIS Prices: PC A02/MF A01

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1269040 AD-A182 513/2/XAB
  CRONUS, A Distributed Operating System: CRONUS DOS
Implementation   (Final rept. Oct 84-Jan 86)
  NTIS Prices: PC A04/MF A01

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1267878 N87-24949/6/XAB
  New Technology Impacts on Future Avionics Architectures
  NTIS Prices: (Order as N87-24940 PC A07/MF A01)

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1266715 DE87008558/XAB
  Parallel   Solution   of   Triangular   Systems   on
Distributed-Memory Multiprocessors
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  NTIS Prices: PC A03/MF A01

2/6/267
1265970 AD-A182 240/2/XAB
  Exact   Performance   Analysis   of   Two   Distributed
Processes with One Synchronization Point   (Technical rept.)

  NTIS Prices: PC A03/MF A01

2/6/268
1265948 AD-A182 216/2/XAB
  Distributed Sensor Networks   (Semiannual technical summary
rept. 1 Apr-30 Sep 86)
  NTIS Prices: PC A03/MF A01

2/6/269
1265911 AD-A182 178/4/XAB
  Data Replication in Nested Transaction Systems   (Technical
rept.)
  NTIS Prices: PC A05/MF A01

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1265909 AD-A182 176/8/XAB
  Remote Pipes and Procedures for Efficient Distributed
Communication   (Technical rept.)
  NTIS Prices: PC A03/MF A01

2/6/271
1265908 AD-A182 175/0/XAB
  Correctness of Orphan Elimination Algorithms   (Master's
thesis)
  NTIS Prices: PC A03/MF A01

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1265037 PB87-180857
  Programming the Parallel Processor   (Final rept.)
  Pub. in The Role of Language in Problem Solving 2, p321-333
1987.   NTIS Prices: Not available NTIS

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1264037 DE87008229/XAB
  Effect   of Distributed Computing Technology on Wide Area
Network Capacity Requirements   Portions of this document are
illegible in microfiche products.
  NTIS Prices: PC A02/MF A01

2/6/274
1262291 PB87-196010/XAB
  Graph   Model   for   Efficient   Reachability   Analysis   of
Description Languages, Series B, Number 34   (Research rept.)
  NTIS Prices: PC E03/MF E01

2/6/275
1259984 AD-A180 847/6/XAB
  ParLance: A Para-Functional Programming Environment for
Parallel and Distributed Computing   (Research rept.)
  NTIS Prices: PC A03/MF A01

2/6/276
1254966 DE87003740/XAB
  Numerical Computation on Massively Parallel Hypercubes
  NTIS Prices: PC A02/MF A01

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1254677 AD-A179 958/4/XAB
  Debugging Parallel Programs with Instant Replay
  (Technical rept.)
  NTIS Prices: PC A03/MF A01

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1254622   AD-A179 902/2/XAB
  Debugging Parallel Programs with Instant Replay
  (Technical rept.)
  NTIS Prices: PC A03/MF A01

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1254235   PB87-860052/XAB
  Distributed   Data   Processing.   October 1985-May 1987
(Citations from the NTIS Database)   (Rept. for Oct 85-May 87)

  NTIS Prices: PC N01/MF N01

2/6/280
1254234   PB87-860045/XAB
  Distributed Data Processing. November 1981-September 1985
(Citations from the NTIS Database)   (Rept. for Nov 81-Sep 85)

  NTIS Prices: PC N01/MF N01

2/6/281
1252186   AD-A179 407/2/XAB
  Experiment   in   Knowledge-Based   Signal   Understanding
Using Parallel Architectures   (Technical rept.)
  NTIS Prices: PC A03/MF A01

2/6/282
1250889   N87-19932/9/XAB
  Computer Sciences and Data Systems. Volume 2
  NTIS Prices: PC A15/MF A01

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1250888   N87-19931/1/XAB
  Computer Sciences and Data Systems, Volume 1
  NTIS Prices: PC A16/MF A01

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1249337   PB87-858429/XAB
  Computer Networks: Data Communication Architecture and
Development. January 1975-April 1987 (Citations from the
INSPEC: Information Services for the Physics and Engineering
Communities Database)   (Rept. for Jan 75-Apr 87)
  NTIS Prices: PC N01/MF N01

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1248435   N87-19022/9/XAB
  Distributed Computer System Enhances Productivity for SRB
(Solid Rocket Booster) Joint Optimization
  NTIS Prices: PC A02/MF A01

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1248419   N87-18988/2/XAB
  Concurrent Extensions to the Fortran Language for Parallel
Programming of Computational Fluid Dynamics Algorithms

NTIS Prices: PC A03/MF A01

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1247784 DE87004030/XAB
  Advanced   Distributed   Processing   with   Focus   and
PC/Focus: Planning Considerations and Phased Implementation
  NTIS Prices: PC A03/MF A01

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1247084 AD-A178 975/9/XAB
  Durra: A Task-Level Description Language Preliminary
Reference Manual   (Final rept.)
  NTIS Prices: PC A03/MF A01

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1243898 DE86014102/XAB
  Performance   Evaluation   of   the   HEP,   ELXSI   and   CRAY
X-MP Parallel Processors on Hydrocode Test Problems
  NTIS Prices: PC A02/MF A01

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1242319 N87-17441/3/XAB
  Comparison of Five Benchmarks
  NTIS Prices: PC A02/MF A01

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1241827 N87-16851/4/XAB
  Distributed Data Acquisition System for Aeronautics Test
Facilities
  NTIS Prices: PC A02/MF A01

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1239787 AD-A176 907/4/XAB
  Naval C(3) Distributed Tactical Decision Making
  (Quarterly rept. 1 Oct-31 Dec 86)
  NTIS Prices: PC A03/MF A01

2/6/293
1239707 AD-A176 827/4/XAB
  Survey of Fault Tolerant Computer Security and Computer
Safety   (Final technical rept. Apr 85-Apr 86)
  NTIS Prices: PC A10/MF A01

2/6/294
1239234 N87-16656/7/XAB
  Database   Interfaces   on   NASA's   (National
Aeronautics   and   Space Administration's) Heterogeneous
Distributed Database System   (Semiannual rept)
  NTIS Prices: PC A03/MF A01

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1239221 N87-16528/8/XAB
  Overview of Database Projects
  (Semiannual status rept)

NTIS Prices: PC A10/MF A01

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1235417 AD-A176 258/2/XAB
Development of Real-Time Speech Recognition
(Final technical rept. 3 Jun 85-2 Dec 86)
NTIS Prices: PC A02/MF A01

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1234157 N87-14914/2/XAB
Placement d'UN Reseau de Processus Communicants Decrit
en FP2 sur Une Structure de Grille en Vue d'Une
Implantation Parallele de Ce Langage (Location of the
Communication Process Network Described in FP2 on a Graph
Structure in Order to Implement the Parallel Processing of
That Language)
NTIS Prices: PC A05/MF A01

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1234151 N87-14907/6/XAB
Aspecten van Het Amsterdams Multiprocessor Prolog Systeem
(Aspects of the Amsterdam Multiprocessor Prolog System)
NTIS Prices: PC A02/MF A01

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1229732 DE86015570/XAB
Portable Environment for Developing Parallel Fortran
Programs
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NTIS Prices: PC A02/MF A01

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1227996 N87-12270/1/XAB
ELAND: An Expert System for the Configuration of Local
Area Networks Applications
NTIS Prices: PC A03/MF A01

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1227995 N87-12265/1/XAB
Implementation and Use of Ada on Distributed
Systems with High Reliability Requirements
(Progress rept. 5 Mar 82-31 Dec 86)
NTIS Prices: PC A04/MF A01

2/6/302
1227984 N87-12247/9/XAB
Parallel Scheduling of Recursively Defined Arrays (Final
rept)
NTIS Prices: PC A03/MF A01

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1227974 N87-12169/5/XAB
Application of a Sparse, Distributed Memory to

the Detection, Identification and Manipulation of
Physical Objects. Semiannual Status Report October 1985-March
1986
   NTIS Prices: PC A02/MF A01

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Using Distributed Processing Portions of this document are
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   NTIS Prices: PC A02/MF A01

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   1227052 AD-A174 506/6/XAB
   Cooperative Intelligence for Remotely Piloted Vehicle
Fleet Control. Analysis and Simulation (Interim rept.)
   NTIS Prices: PC A04/MF A01

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   1227032 AD-A174 486/1/XAB
   Assessment of the Computer Science Activities of the
Office of Naval Research
   NTIS Prices: PC A03/MF A01

   2/6/307
   1226827 AD-A174 276/6/XAB
   Processor Renaming in Asynchronous Environments
   (Technical rept.)
   NTIS Prices: PC A02/MF A01

   2/6/308
   1225747 N87-11510/1/XAB
   EOS (Embedded Operating Systems): A Project to Investigate
the Design and Construction of Real-Time Distributed Embedded
Operating Systems
   NTIS Prices: PC A10/MF A01

   2/6/309
   1225308 AD-A173 989/5/XAB
   Serial Order: A Parallel Distributed Processing Approach
   (Technical rept. Jun 85-Mar 86)
   NTIS Prices: PC A04/MF A01

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   Unified Approach to Parallel Computation: Performance
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Programming. Progress Report, September 1, 1985-August 31,
1986
   NTIS Prices: PC A02/MF A01

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   1223263 AD-A173 283/3/XAB
   Applying Activation Theory for Modeling Task Interference

in Dual-Task Situations   (Final rept. Mar 85-Jun 86)
   NTIS Prices: PC A02/MF A01

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1223009 AD-A173 028/2/XAB
  Information Processing Research   (Final rept. Jan 81-Dec
84)
  NTIS Prices: PC A07/MF A01

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1222214 N86-33032/1/XAB
  First 3 Years of Operation of RIACS (Research Institute
for Advanced Computer Science) (1983-1985)   (Final rept)
  NTIS Prices: PC A02/MF A01

  2/6/314
1220744 N86-32112/2/XAB
  Multiple Grid Problems on Concurrent-Processing Computers
  NTIS Prices: PC A06/MF A01

  2/6/315
1219350 AD-A172 224/8/XAB
  Distributed   Control   in   Computer   Networks   and
Cross-Sections of Colored Multidimensional Bodies   (Interim
research rept.)
  NTIS Prices: PC A02/MF A01

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1219323 AD-A172 196/8/XAB
  RAMBOT   (Restructuring   Associative   Memory   Based   on
Training):   A Connectionist Expert System That Learns by
Example
  (Technical rept. Oct 85-Apr 86)
  NTIS Prices: PC A03/MF A01

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  DECNET: Digital Equipment Corporation Network Architecture.
1976-October 1986   (Citations   from the INSPEC: Information
Services for the Physics and Engineering Communities Database)

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  NTIS Prices: PC N01/MF N01

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  NTIS Prices: PC N01/MF N01

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1218318 N86-31261/8/XAB
  Optimal   Partitioning   of   Random   Programs   Across   Two

Processors
  (Final rept)
  NTIS Prices: PC A03/MF A01

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1217862   DE86013517/XAB
  Denelcor HEP Multiprocessor Simulator
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  NTIS Prices: PC A02/MF A01

  2/6/321
1216029   N86-30380/7/XAB
  Force on the Flex: Global Parallelism and Portability
  (Final rept)
  NTIS Prices: PC A02/MF A01

  2/6/322
1216028   N86-30379/9/XAB
  Dynamic Remapping of Parallel Computations with Varying
Resource Demands   (Final rept)
  NTIS Prices: PC A04/MF A01

  2/6/323
1215030   PB86-875507/XAB
  Distributed   Data   Base   Management   Systems.   October
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1214437   N86-29562/3/XAB
  UCLA   Design   Diversity   Experiment   (DEDIX)   System: A
Distributed Testbed for Multiple-Version Software
  NTIS Prices: PC A02/MF A01

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1214435   N86-29551/6/XAB
  Statistical   Methodologies   for   the   Control   of   Dynamic
Remapping   (Final rept)
  NTIS Prices: PC A03/MF A01

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1214434   N86-29550/8/XAB
  Approximate Algorithms for Partitioning and Assignment
Problems   NTIS Prices: PC A03/MF A01

  2/6/327
1210685   AD-A169 981/8/XAB
  High Performance Parallel Computing
  (Final rept. 1 Feb 84-31 Jan 85)
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1201386   N86-25142/8/XAB
  Implementation   and   Use   of   Ada   on   Distributed
Systems with High Reliability Requirements   (Annual rept)
  NTIS Prices: PC A05/MF A01

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1199173   PB86-870466/XAB
  Micro-Mainframe   Links: Forecasts and Markets. 1983-June
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1198619   N86-24347/4/XAB
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Strategies   (Final rept)
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1196115   N86-23319/4/XAB
  Display System Software for the Integration of an Adage 3000
Programmable Display Generator into the Solid Modeling Package
C.a.D. Software   (Contractor rept., 26 Sep 84-31 Mar 86)
  NTIS Prices: PC A08/MF A01

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1195222   DE86007645/XAB
  Environments for Prototyping Parallel Algorithms
  NTIS Prices: PC A02/MF A01

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1193603   N86-21516/7/XAB
  Three-Dimensional   Boundary   Layer   Analysis   Program
Blay and Its Application
  NTIS Prices: PC A02/MF A01

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1192839   DE86007309/XAB
  Forward Spectrometers at the SSC
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products.
  NTIS Prices: PC A02/MF A01

2/6/335
1191949   PB86-866829/XAB
  Distributed   Information   Systems.   1975-April   1986
(Citations from the INSPEC: Information Services for the
Physics and Engineering Communities Database)   (Rept. for
1975-Apr 86)
  NTIS Prices: PC N01/MF N01

2/6/336

1184451 AD-A164 897/1/XAB
  Semi-Applicative Programming. Examples of Context Free
Recognizers   (Technical rept.)
  NTIS Prices: PC A03/MF A01

2/6/337
1183966 PB86-862703/XAB
  Computer Networks: Data Communication Architecture and
Development. 1975-March 1986 (Citations from the INSPEC:
Information Services for the Physics and Engineering
Communities Database)   (Rept. for 1975-Mar 86)
  NTIS Prices: PC N01/MF N01
?   t   1387880/7;t   1387870/7;t   1381250/7;t   1380043/7;t
1380010/7;t 1379988/7;t 1377085/7

APPENDIX C

1387880/7
1387880 N89-12255/0/XAB
Study of the Development of On-Board Distributed Software Systems Using Ada
Porcherlabreuille, B. ; Dellatorre, A.
CISI Ingenierie, Toulouse (France).
Corp. Source Codes: 093451000; CP773641

Use of Ada technology for the design and implementation of large distributed systems in the context of the Columbus space station program was assessed by developing in Ada a prototype of an on-board data management system (DMS). Results and lessons learned by applying a virtual node approach together with hierarchical object oriented design contribute to a better understanding and management of the use of Ada technology. This approach provides the definition of a development framework very well adapted to the Columbus DMS context. By defining applications and services software as Ada virtual nodes it is possible to design the whole system as a single Ada program, structured according to the architecture adopted for DMS. The applications could be developed in parallel on geographically distributed sites and be validated individually using this initial model and the corresponding interface specification. The final integration process could concentrate on the operational validation of the system in distributed configuration (the functional validation in centralized configuration being obtained at the end of the first phase). The efficient implementation of this method requires support tools for: checking the rules imposed by the virtual node approach; and scanning virtual node specifications (Ada packages) in order to generate a surrogate software layer to provide syntactically transparent communication between virtual nodes located on distinct physical processors.

1387870/7
1387870 N89-12222/0/XAB
Support Architecture for Reliable Distributed Computing Systems. Semiannual Status Report, June 9, 1987-June 8, 1988

Dasgupta, P. ; LeBlanc, R. J.
Georgia Inst. of Tech., Atlanta.
Corp. Source Codes: 010263000; GW167534
Sponsor: National Aeronautics and Space Administration, Washington, DC.
Report No.: NAS 1.26:183235; NASA-CR-183235
30 Sep 88   36p
Languages: English
Journal Announcement: GRAI8906; STAR2703
NTIS Prices: PC A03/MF A01
Country of Publication: United States
Contract No.: NAG1-430
The Clouds project is well underway to its goal of building a unified distributed operating system supporting the object model. The operating system design uses the object concept of structuring software at all levels of the system. The basic operating system was developed and work is under progress to build a usable system.

1381250/7
1381250   AD-A204 126/7/XAB
   QLISP for Parallel Processors
   (Final rept. 15 Jul 86-31 Jul 88)
   McCarthy, J.
   Stanford Univ., CA. Dept. of Computer Science.
   Corp. Source Codes: 009225004; 094120
   Jan 89   4p
   Languages: English
   Journal Announcement: GRAI8912
   NTIS Prices: PC A02/MF A01
   Country of Publication: United States
   Contract No.: N00039-84-C-0211; ARPA Order-5826
   The goal of the Qlisp project at Stanford is to gain experience with the shared-memory, queue-based approach to parallel Lisp, by implementing the Qlisp language on an actual multiprocessor, and by developing a symbolic algebra system as a testbed application. The experiments performed on the simulator included: 1. Algorithms for sorting and basic data structure manipulation for polynomials. 2. Partitioning and scheduling methods for parallel programming. 3. Parallelizing the production rule system OPS5. Computer programs. (jes)

1380043/7
1380043   N89-16347/1/XAB
   Comparing Host and Target Environments for Distributed Ada Programs
   Paulk, M. C.
   System Development Corp., Huntsville, AL.
   Corp. Source Codes: 030459000; S8792091
   Sponsor: National Aeronautics and Space Administration, Washington, DC.
   1986   10p
   Languages: English

In NASA, Lyndon B. Johnson Space Center, First
International Conference on Ada (R) Programming Language
Applications for the NASA Space Station, Volume 2 10 p.
NTIS Prices: (Order as N89-16326/5, PC A22/MF A01)
Country of Publication: United States

The Ada programming language provides a means of
specifying logical concurrency by using multitasking.
Extending the Ada multitasking concurrency mechanism into
a physically concurrent distributed environment which imposes
its own requirements can lead to incompatibilities. These
problems are discussed. Using distributed Ada for a target
system may be appropriate, but when using the Ada
language in a host environment, a multiprocessing model may
be more suitable than retargeting an Ada compiler for the
distributed environment. The tradeoffs between multitasking
on distributed targets and multiprocessing on distributed
hosts are discussed. Comparisons of the multitasking and
multiprocessing models indicate
different areas of application.

1380010/7
1380010 N89-16314/1/XAB
Impact of Common APSE (Ada Program Support Environment)
Interface Set Specifications on Space Station Information
Systems

Diaz-Herrera, J. L. ; Sibley, E. H.
George Mason Univ., Fairfax, VA.
Corp. Source Codes: 063190000; GV714519
In NASA, Lyndon B. Johnson Space Center, First
International Conference on Ada (R) Programming Language
Applications for the NASA Space Station, Volume 1 11 p.
NTIS Prices: (Order as N89-16279/6, PC A18/MF A01)
Country of Publication: United States

Certain types of software facilities are needed in
a Space Station Information Systems Environment; the
Common APSE (Ada Program Support Environment) Interface
Set (CAIS) was proposed as a means of satisfying them. The
reasonableness of this is discussed by examining the
current CAIS, considering the changes due to the latest
Requirements and Criteria (RAC) document, and postulating the
effects on the CAIS 2.0. Finally, a few additional comments
are made on the problems inherent in the Ada language itself,
especially on its deficiencies when used for implementing
large distributed processing and data base applications.

1379988/7
1379988 N89-16292/9/XAB
Distributed Programming Environment for Ada

Brennan, P. ; McDonnell, T. ; McFarland, G. ; Timmins, L. J. ; Litke, J. D.

Grumman Data Systems Corp., Woodbury, NY.

Despite considerable commercial exploitation of fault tolerance systems, significant and difficult research problems remain in such areas as fault detection and correction. A research project is described which constructs a distributed computing test bed for loosely coupled computers. The project is constructing a tool kit to support research into distributed control algorithms, including a distributed Ada compiler, distributed debugger, test harnesses, and environment monitors. The Ada compiler is being written in Ada and will implement distributed computing at the subsystem level. The design goal is to provide a variety of control mechanics for distributed programming while retaining total transparency at the code level.

1377085/7
1377085   N89-15601/2/XAB
Very   Large   Area   Network   (VLAN)   Knowledge-Base Applied to Space Communication Problems
Zander, C. S.

Colorado State Univ., Fort Collins.

This paper first describes a hierarchical model for very large area networks (VLAN). Space communication problems whose solution could profit by the model are discussed and then an enhanced version of this model incorporating the knowledge needed for the missile detection-destruction problem is presented. A satellite network or VLAN is a network which includes at least one satellite. Due to the complexity, a compromise between fully centralized and fully distributed network management has

been adopted. Network nodes are assigned to a physically localized group, called a partition. Partitions consist of groups of cell nodes with one cell node acting as the organizer or master, called the Group Master (GM). Coordinating the group masters is a Partition Master (PM). Knowledge is also distributed hierarchically existing in at least two nodes. Each satellite node has a back-up earth node. Knowledge must be distributed in such a way so as to minimize information loss when a node fails. Thus the model is hierarchical both physically and informationally.

? t 1372001/7;t 1369604/7;t 1369112/7;t 1365721/7;t 1361012/7;t 1351011/7

1372001/7
1372001 N89-14695/5/XAB
  Analysis of FDDI Synchronous Traffic Delays
  Johnson, M. J.
  National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center.
  Corp. Source Codes: 019045001; NC473657
  Report No.: NAS 1.26:183223; RIACS-TR-88.3; NASA-CR-183223
  Jan 88   21p
  Languages: English
  Journal Announcement: GRAI8909; STAR2706
  NTIS Prices: PC A03/MF A01
  Country of Publication: United States
  Contract No.: NCC2-387
  The Fiber Distributed Data Interface (FDDI) high-speed token-ring protocol provides support for two classes of service: synchronous, to support applications which require deterministic access to the channel, and asynchronous, to support applications which do not have such stringent response-time requirements. The purpose of this paper is to determine how
to set ring parameters to support synchronous traffic most efficiently. Both theoretical results and results obtained from a simulation study are presented.

1369604/7
1369604 PB89-150296/XAB
  Distributed-Feedback Laser-Diode Module with an Optical Isolator for Multigigabit Optical Transmission
  Yamashita, J. ; Nakamura, T. ; Suganuma, R. ; Ito, S. ; Kakimito, S.
  Mitsubishi Electric Corp., Tokyo (Japan).
  Corp. Source Codes: 076350000
  c1988   3p
  Languages: Japanese
  Journal Announcement: GRAI8908
  Text in Japanese.
  Included in Mitsubishi Denki Giho, v62 n10 p77-80 1988.
  NTIS Prices: (Order as PB89-150221, PC E05/MF A01)
  Country of Publication: Japan

The module, which has a thermoelectric cooler, has the following advantages: a smooth frequency response up to 5GHz, relative intensity noise less than -145dB/Hz, side-model suppression ratio better than 35dB during high-bit-rate modulation, high output-power stability (< or = 0.2dB) over a wide 0 approx. 60 degrees C operating-temperature range, and efficient cooling.

1369112/7
1369112 N89-13991/9/XAB
Strategy for Reducing Turnaround Time in Design Optimization Using a Distributed Computer System
Young, K. C. ; Padula, S. L. ; Rogers, J. L.
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Corp. Source Codes: 019041001; ND210491
Report No.: NAS 1.15:101519; NASA-TM-101519
Oct 88   10p
Languages: English
Journal Announcement: GRAI8908; STAR2705
Presented at the Asme Design Technology Conferences-the Design Automation Conference, Kissimmee, Fla., 25-28 Sep. 1988.
NTIS Prices: PC A02/MF A01
Country of Publication: United States
There is a need to explore methods for reducing lengthly computer turnaround or clock time associated with engineering design problems. Different strategies can be employed to reduce this turnaround time. One strategy is to run validated analysis software on a network of existing smaller computers so that portions of the computation can be done in parallel. This paper focuses on the implementation of this method using two types of problems. The first type is a traditional structural design optimization problem, which is characterized by a simple data flow and a complicated analysis. The second type of problem uses an existing computer program designed to study multilevel optimization techniques. This problem is characterized by complicated data flow and a simple analysis. The paper shows that distributed computing can be a viable means for reducing computational turnaround time for engineering design problems that lend themselves to decomposition. Parallel computing can be accomplished with a minimal cost in terms of hardware and software.

1365721/7
1365721 N89-13173/4/XAB
European Seminar on Neural Computing
Zomzely-Neurath, C.
Office of Naval Research, London (England).
Corp. Source Codes: 021603000; OH736806
Sponsor: National Aeronautics and Space Administration, Washington, DC.
Report No.: ONRL-8-010-C

31 Aug 88   38p
Languages: English   Document Type: Conference proceeding
Journal Announcement: GRAI8907; STAR2704
Seminar Held in London, United Kingdom, Feb. 1988.
NTIS Prices: PC A03/MF A01
Country of Publication: Other
Topics range from neural systems and models through languages and architectures to the respective European and American perspectives on neurocomputing.

1361012/7
1361012   N89-11438/3/XAB
   Sopmcr: An Operating System for the Multiprocessor for Communication Networks
   Martins, E. ; Ambrosio, A. M. ; Oshiro, S. K.
   Instituto de Pesquisas Espaciais, Sao Jose dos Campos (Brazil).
   Corp. Source Codes: 058511000; IO601891
   Sponsor: National Aeronautics and Space Administration, Washington, DC.
   Report No.: INPE-4675-NTE/284
   Aug 88   270p
   Languages: Portuguese
   Journal Announcement: GRAI8905; STAR2702
   In Portuguese; English Summary.
   NTIS Prices: PC A12/MF A01
   Country of Publication: Brazil
This work presents a distributed system developed at INPE, designed for the Multiprocessor for Network Communications (MCR). The system supports execution of application processes by request from other processes or external events. These processes communicate with each other by asynchronously exchanging messages; the use of a logical entity called channel permits the interprocess communications, independently of where the
processes are being executed. The MCR was designed to bepart of a packet-switching communications subnetwork node, among other applications; therefore the system must support the implementation of the lower layers of a communications protocol (layers 2 and 3 in the ISO/OSI architecture).

1351011/7
1351011   TIB/B88-81947/XAB
   Nichtnukleare   Energieforschung   in   der   Bundesrepublik Deutschland. Bilanz und Ausblick. (Non-nuclear energy research in the Federal Republic of Germany. Balance and outlook)
   Nitsch, J.
   Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt e.V., Stuttgart (Germany, F.R.). Inst. fuer Technische Physik.
   Corp. Source Codes: 062740003
   Report No.: DFVLR-ITP/IB-441/463-83
   Jun 83   83p

Languages: German
Journal Announcement: GRAI8901
In German,
NTIS Prices: PC E09
Country of Publication: Germany, Federal Republic of

After taking a look at the present situation of energy supply in the Federal Republic of Germany the book reports on the non-nuclear energy research of 1972-1982. The topic is divided into following main points: 1) Criteria of supporting technologies; 2) A comprehensive look at the support programs and the classification of the individual areas; 3) The program 'non-nuclear energy systems'; 4) The partial program 'rational utilization of energy in the spheres of application and secondary energy'; 5) The partial program 'new energy sources';and 6) The partial program 'coal and other fossil energy sources'. (UA). (Copyright (c) 1988 by FIZ. Citation no. 88:081947.)

?   t   1360264/7;t   1358316/7;t   1344931/7;t   1344375/7;t
1342170/7;t 1341664/7;t 1341275/7

1360264/7
1360264   DE88016468/XAB
BLAZE Family of Languages: Programming Environments for Shared and Distributed Memory Architectures
Mehrotra, P. ; Van Rosendale, J.
Argonne National Lab., IL. Mathematics and Computer Science Div.   Corp. Source Codes: 001960004; 9502076
Sponsor: Department of Energy, Washington, DC.
Report No.: ANL/MCS-TM-108
Jun 88   15p
Languages: English
Journal Announcement: GRAI8905; NSA1300
Portions of this document are illegible in microfiche products.   NTIS Prices: PC A03/MF A01
Country of Publication: United States
Contract No.: W-31109-ENG-38

Designing software environments for parallel computers is a central issue in parallel computing research. This paper discusses this issue and the alternate approaches to resolving it which are being studied. We also look at the way in which the type of parallel architecture constrains the design of the programming environments. Shared memory multiprocessors provide the most freedom in the design of effective programming environments, but are more costly than nonshared memory architectures of comparable power. After this general discussion, we describe two new parallel programming languages, BLAZE 2 and KALI. The first of these, BLAZE 2, is a high level language for shared memory multiprocessors. The second, KALI, is a moderately high-level language for distributed memory architectures. We conclude with a brief discussion of the differences between these two languages, which are a consequence of

the difference between shared and non-shared memory multiprocessors. 13 refs., 3 figs. (ERA citation 13:052904)

1358316/7
1358316   N89-10216/4/XAB
   High Speed Fiber Optics Local Area Networks: Design and Implementation. Final Report, January 1, 1984-December 31, 1987
   Tobagi, F. A.
   Stanford Univ., CA.
   Corp. Source Codes: 009225000; S0380476
   Sponsor: National Aeronautics and Space Administration, Washington, DC.
   Report No.: NAS 1.26:182432; NASA-CR-182432
   29 Sep 88   9p
   Languages: English
   Journal Announcement: GRAI8904; STAR2701
   NTIS Prices: PC A02/MF A01
   Country of Publication: United States
   Contract No.: NAG2-292
   The design of high speed local area networks (HSLAN) for communication among distributed devices requires solving problems in three areas: (1) the network medium and its topology; (2) the medium access control; and (3) the network interface. Considerable progress has been made in all areas. Accomplishments are divided into two groups according to their theoretical or experimental nature. A brief summary is given in Section 2, including references to papers which appeared in the literature, as well as to Ph.D. dissertations and technical reports published at Stanford University.

1344931/7
1344931   AD-A197 101/9/XAB
   Experiences with POKER
   Notkin, D. ; Socha, D. ; Snyder, L. ; Bailey, M. L. ; Forstall, B.
   Washington Univ., Seattle. Dept. of Computer Science.
   Corp. Source Codes: 005042231; 395224
   Apr 88   12p
   Languages: English
   Journal Announcement: GRAI8824
   Sponsored in part by Grant AFOSR-88-0023.
   NTIS Prices: PC A03/MF A01
   Country of Publication: United States
   Contract No.: N00014-86-K-0264; NSF-CCR84-16878
   Experience from over five years of building nonshared memory parallel programs using the Poker Parallel Programming Environment has positioned us to evaluate our approach to defining and developing parallel programs. This paper presents the more significant results of our evaluation of Poker. The evaluation is driving our next effort in parallel programming environment; many of the results should be sufficiently

general to apply to other related efforts. Keywords: Algorithms; Programming language. (kr)

1344375/7
1344375 PB88-242144/XAB
  Programming Languages for Distributed Systems
  Bal, H. E. ; Steiner, J. G. ; Tanenbaum, A. S.
  Vrije   Univ.,   Amsterdam   (Netherlands).   Subfaculteit
Wiskunde en Informatica.
  Corp. Source Codes: 019507011;
  Sponsor: Mathematisch Centrum, Amsterdam (Netherlands).
  Report No.: IR-147
  Feb 88   84p
  Languages: English
  Journal Announcement: GRAI8823
  Prepared   in   cooperation   with   Mathematisch
Centrum,   Amsterdam (Netherlands).
  NTIS Prices: PC E04/MF A01
  Country of Publication: Netherlands
  The paper presents a survey of recent research in
programming distributed systems, with the emphasis on new
programming languages specifically designed for this purpose.
Short descriptions are given of 20 languages. In addition, a
comprehensive bibliography provides over 250 references to
more
than 100 languages for distributed programming.

1342170/7
1342170 AD-A196 931/0/XAB
  Parallel Programming Paradigms   (Doctoral thesis)
  Nelson, P. A.
  Washington Univ., Seattle. Dept. of Computer Science.
  Corp. Source Codes: 005042231; 395224
  Report No.: TR-87-07-02
  Jul 87   142p
  Languages: English   Document Type: Thesis
  Journal Announcement: GRAI8823
  Sponsored in part by Grant NSF-DCR84-16878.
  NTIS Prices: PC A07/MF A01
  Country of Publication: United States
  Contract No.: N00014-86-K-0264; N00014-85-K-0328
  Paradigms   for   the   development   of   sequential
algorithms,   such   as   divide-and-conquer and the greedy
method, are well known. Paradigms for the development   of
parallel algorithms, especially algorithms for non-shared
memory MIMD machines, are not well known. These paradigms
are important, not only as tools for the development of new
algorithms, but also because algorithms using the same
paradigm often have common properties that can be
exploited   by   operations   such   as   contraction. This
dissertation identifies   four   primary paradigms used by
non-shared   memory   MIMD   algorithms.   They   are
compute-aggregate-broadcast, divide-and-conquer, pipelining,
and reduction. Compute-aggregate-broadcast   is   used,   for

example, in numerical approximation algorithms like the conjugate gradient iterations. Three variations of the compute-aggregate-broadcast paradigm are studied. Divide-and-conquer is shown to be applicable to parallel algorithms. The relationship between divide-and-conquer algorithms and the n-cube is studied. Systolic techniques are known to be broadly applicable for the development of MIMD algorithms. Systolic algorithms are shown to be members of the more general pipelining paradigm. Finally, the reduction paradigm is briefly studied. The contraction problem, the problem arising when an algorithm requires more processors than are available on the execution machine, is studied. Special attention is given to common solutions to the contraction problem in each paradigm. (KR)

1341664/7
1341664 AD-A196 419/6/XAB
  Poker (4.1): A Programmer's Reference Guide (Technical rept.)
  Snyder, L.
  Washington Univ., Seattle. Dept. of Computer Science.
  Corp. Source Codes: 005042231; 395224
  Report No.: TR-83-03-03
  Apr 88 97p
  Languages: English
  Journal Announcement: GRAI8823
  NTIS Prices: PC A05/MF A01
  Country of Publication: United States
  Contract No.: N00014-86-K-0264; NSF-CCR84-16878
  This document gives a succinct description of the facilities available with the Poker Parallel Programming Environment. The emphasis is on what is available rather than how to achieve particular results. Although the sections are self-contained, so that they may be referred to independently, there are a few things you should know: 1) Poker uses interactive graphics. The graphics are described in Section 2; the interaction is described in Section 3; 2) The usual programming language notion of a 'source program' as a monolithic piece of symbolic text has been replaced in Poker by a database. The way to create, view, and change the database is described in Section 4; 3) Object programs (the 'compiled database') are executed or emulated by Poker and snapshots of the execution can be continuously displayed; 4) Poker supports a variety of CHiP architectures; the current one can be displayed or changed using the CHiP Parameters facility; Section 7; 5) The back page of this document gives a summary of the commands; and 6) Other versions of Poker exists; consult Appendix B for your particular system. (kr)

1341275/7
1341275 PB88-868625/XAB
  DECNET: Digital Equipment Corporation Network Architecture. January 1976-September 1988 (Citations from

the INSPEC: Information Services for the Physics and Engineering Communities Database) (Rept. for Jan 76-Sep 88)
  National Technical Information Service, Springfield, VA.
  Corp. Source Codes: 055665000
  Sep 88   63p
  Languages: English   Document Type: Bibliography
  Journal Announcement: GRAI8822
  Supersedes PB87-867958.
  NTIS Prices: PC N01/MF N01
  Country of Publication: United States
  This bibliography contains citations concerning the network architecture DECNET provided by the Digital Equipment Corporation. Topics include hardware and software for implementing communications between different computer operating systems. DECNET's ability to create resource sharing, communications networks, and distributed computing is examined by employing specialized protocol layers which serve the functions of network control, data access control, interprogram communications, and automatic error detection and retransmission. Applications for medical information systems, chemical laboratories, electronic mail systems, and industrial process control are presented. (This updated bibliography contains 126 citations, 40 of which are new entries to the previous edition.)
  ?   t   1356758/7;t   1356357/7;t   1356011/7;t   1353023/7;t 1353013/7;t 1353009/7;t 1352984/7

  1356758/7
  1356758 PB89-122394/XAB
  GRAMPS (General Real-Time Asynchronous Multiprocessor System) Operating System: User's Guide
  Mansbach, P. ; Shneier, M.
  National Bureau of Standards, Gaithersburg, MD.
  Corp. Source Codes: 081914000;
  Sponsor: Philips Labs., Briarcliff Manor, NY.
  Report No.: NBSIR-88/3776
  Sep 88   43p
  Languages: English
  Journal Announcement: GRAI8903
  Prepared in cooperation with Philips Labs., Briarcliff Manor, NY.   NTIS Prices: PC A03/MF A01
  Country of Publication: United States
  The guide describes the GRAMPS real-time multiprocessor operating system from an applications viewpoint. It presents the information needed to use GRAMPS in implementing distributed processing applications. Additional information needed by an administrator to set up and maintain a specific application appears in the Administrator's Guide.

  1356357/7
  1356357 PB89-115315/XAB
  ESPRIT SPAN Project: A Kernel System for Integrating Parallel Symbolic and Numeric Processing (Technical rept.)

Refenes, A. N. ; McCabe, S. C. ; Treleaven, P. C.
University Coll., London (England). Dept. of Computer
Science.
Within   ESPRIT,   Europe's $3   billion   Information
Technology research program, projects are developing next
generation parallel computers. Each project is undertaken
by a consortium of companies and universities. One such
consortium (SPAN) is investigating the integration of
numeric and symbolic processing involving research at the
applications, language, and architecture levels. The core
of the SPAN project consists of a Kernel System which
connects languages and applications to a range of parallel
computer architectures. The Kernel System comprises a
Target Machine Language and its corresponding Virtual
Machine. The paper describes the design of the SPAN Target
Machine Language and its Virtual Machine. The Target Machine
Language is a procedural programming language providing
explicit constructs to facilitate parallel execution of
programs and primitive n-ary list operations to support
array and list-processing in a uniform way.

 1356011/7
1356011 N88-30321/9/XAB
  Performance Analysis of FDDI (Fiber Distributed Data
Interface)   Johnson, M. J.
  National Aeronautics and Space Administration, Moffett
Field, CA. Ames Research Center.
  The Fiber Distributed Data Interface (FDDI) is an emerging
ANSI and ISO standard for a 100 megabit per second
fiber optic token ring. The performance of the FDDI media
access control protocol is analyzed using a simulation
developed at NASA Ames. Both analyses using standard measures
of performance (including average delay for asynchronous
traffic, channel utilization, and transmission queue length)
and analyses of characteristics of ring behavior which can
be attributed to constraints imposed by the
timed token protocol on token holding time (including
bounded token rotation time, support for synchronous
traffic, and fairness of channel access for nodes transmitting

asynchronous traffic) are included.

1353023/7
1353023 N88-29425/1/XAB
Networking and AI (Artificial Intelligence) Systems:
Requirements and Benefits (Abstract Only)
Gold Hill Computers, Inc., Cambridge, MA.
Corp. Source Codes: 092849000; G1146597
Sponsor: National Aeronautics and Space Administration,
Washington, DC.
Aug 88   2p
Languages: English
Journal Announcement: GRAI8902; STAR2623
In NASA, Marshall Space Flight Center, Second Conference
on Artificial Intelligence for Space Applications p 623-624.
NTIS Prices: (Order as N88-29351/9, PC A99/MF E04)
Country of Publication: United States
The price performance benefits of network systems is well
documented. The ability to share expensive resources sold
timesharing for mainframes, department clusters of
minicomputers, and now local area networks of workstations
 and servers. In the process, other fundamental system
requirements emerged. These have now been generalized
with open system requirements for hardware, software,
applications and tools. The ability to interconnect a
variety of vendor products has led to a specification of
interfaces that allow new techniques to extend existing
systems for new and exciting applications. As an example
of the message passing system, local area networks provide
a testbed for many of the issues addressed by future
concurrent architectures: synchronization, load balancing,
fault tolerance and scalability. Gold Hill has been
working with a number of vendors on distributed architectures
that range from a network of workstations to a hypercube of
microprocessors with distributed memory. Results from early
applications are promising both for performance and
scalability.

1353013/7
1353013 N88-29415/2/XAB
Design Consideration in Constructing High
Performance Embedded Knowledge-Based Systems (KBS)
Dalton, S. D. ; Daley, P. C.
Martin Marietta Aerospace, Denver, CO. Denver Div.
Corp. Source Codes: 100103001; MI411300
Sponsor: National Aeronautics and Space Administration,
Washington, DC.
Aug 88   6p
Languages: English
Journal Announcement: GRAI8902; STAR2623
In NASA, Marshall Space Flight Center, Second Conference
on Artificial Intelligence for Space Applications p 591-596.
NTIS Prices: (Order as N88-29351/9, PC A99/MF E04)
Country of Publication: United States

As the hardware trends for artificial intelligence (AI) involve more and more complexity, the process of optimizing the computer system design for a particular problem will also increase in complexity. Space applications of knowledge based systems (KBS) will often require an ability to perform both numerically intensive vector computations and real time symbolic computations. Although parallel machines can theoretically achieve the speeds necessary for most of these problems, if the application itself is not highly parallel, the machine's power cannot be utilized. A scheme is presented which will provide the computer systems engineer with a tool for analyzing machines with various configurations of array, symbolic, scaler, and multiprocessors. High speed networks and interconnections make customized, distributed, intelligent systems feasible for the application of AI in space. The method presented can be used to optimize such AI system configurations and to make comparisons between existing computer systems. It is an open question whether or not, for a given mission requirement, a suitable computer system design can be constructed for any amount of money.

The problem addressed by this expert system concerns the expansion of capability of a Real Time Trainer for the Spacelab flight crew. As requirements for more models or fidelity are placed upon the system, expansion is necessary. The simulator can be expanded using a larger processor or by going to a distributed system and expand by adding additional processors. The distributed system is preferable because it is more economical and can be expanded in a more incremental manner. An expert system was developed to evaluate modeling and timing capability within a real time training simulator. The expert system is based upon a distributed configuration. Components of the modeled system are control tasks, network tasks, emulator tasks, processors, displays, and a network. The distributed module expert system (DMES) allows the configuring of processors, tasks,

display use, keyboard use, and selection of alternate methods to update the data buffer. Modules can be defined with execution occurring in a specific processor on a network. The system consists of a knowledge front end editor to interactively generate or update the knowledge base, an inference engine, a display module, and a recording module.

1352984/7
1352984   N88-29386/5/XAB
   Distributed Cooperating Processes in a Mobile Robot Control System
   Skillman, T. L.
   Boeing Co., Seattle, WA.
   Corp. Source Codes: 004210000; BR564481
   Sponsor: National Aeronautics and Space Administration, Washington, DC.
   Aug 88   12p
   Languages: English
   Journal Announcement: GRAI8902; STAR2623
   In NASA, Marshall Space Flight Center, Second Conference on Artificial Intelligence for Space Applications p 325-336.
   NTIS Prices: (Order as N88-29351/9, PC A99/MF E04)
   Country of Publication: United States
   A mobile inspection robot has been proposed for the NASA Space Station. It will be a free flying autonomous vehicle that will leave a berthing unit to accomplish a variety of inspection tasks around the Space Station, and then return to its berth to recharge, refuel, and transfer information. The Flying Eye robot will receive voice communication to change its attitude, move at a constant velocity, and move to a predefined location along a self generated path. This mobile robot control system requires integration of traditional command and control techniques with a number of AI technologies. Speech recognition, natural language understanding, task and path planning, sensory abstraction and pattern recognition are all required for successful implementation. The interface between the traditional numeric control techniques and the symbolic processing to the AI technologies must be developed, and a distributed computing approach will be needed to meet the real time computing requirements. To study the integration of the elements of this project, a novel mobile robot control architecture and simulation based on the blackboard architecture was developed. The control system operation and structure is discussed.

?   t   1339013/7;t   1337246/7;t   1332983/7;t   1332768/7;t
1332523/7;t 1332050/7;t 1331894/7;t 1331892/7

1339013/7
1339013   AD-A195 520/2/XAB
   TAC-1:   A   Knowledge-Based   Air   Force   Tactical   Battle

Management Testbed   (Interim rept. Oct 86-Sep 87)
   Nugent, R. O. ; Tucker, R. W.
   MITRE Corp., McLean, VA.
   Corp. Source Codes: 045505000; 402364
   Sponsor: Rome Air Development Center, Griffiss AFB, NY.
   Report No.: RADC-TR-88-10
   Jan 88   78p
   Languages: English
   Journal Announcement: GRAI8822
   NTIS Prices: PC A05/MF A01
   Country of Publication: United States
   Contract No.: F19628-87-C-0001; 5581; 27
   This   report   describes   the   framework   for,   and   a
demonstration vehicle of, a   knowledge-based testbed for
integrating multiple artificial intelligence systems   into
a distributed processing network for purposes for evaluation
and   exploitation. TAC-1 is a version of the testbed applied
to the domain of Air Force tactical battle management. The
domain-independent framework includes a centralized control
subnet, including a message router and a common   protocol
language   for   message passing among component systems. A
Common Database and a Common Knowledge Base are essential
components of the testbed. The Router directs data queries to
the Common Database (one of the hosted   systems)   and,
through the use of a Common Knowledge Base, directs service
requests to the systems which can handle them. Keywords:
Knowledge   based   systems,   Distributed   artificial
intelligence, Cooperating knowledge based systems, Knowledge
based tactical battle management. (sdw)

   1337246/7
1337246   AD-A195 395/9/XAB
   ACCESS: A Communicating and Cooperating Expert Systems
System
   (Final rept. 30 Jun 87-31 Jan 88)
   Cottman, B. H. ; Paslay, R. C.
   Symbiotics, Inc., Caambridge, MA.
   Corp. Source Codes: 092500000; 419151
   31 Jan 88   112p
   Languages: English
   Journal Announcement: GRAI8821
   NTIS Prices: PC A06/MF A01
   Country of Publication: United States
   Contract No.: DAAB10-87-C-0053
   The primary focus of Phase I was to prototype a development
environment, ACCESS, for A Communicating and Cooperating
Expert Systems System. More generally, this work explored the
question of what capabilities were needed in a   development
environment   for   embedding distributed knowledge-based
systems   applications on personal computer or work-station
class platforms. The stated goal of the Phase I research
and development effort was to investigate and implement a
software environment for the realization of cooperating
knowledge sources on personal computers. This system was to

be Lisp based, distributed processing was to be facilitated by message passing using TCP/IP, control was to be accomplished by meta-level objects and a variety of features were to be provided to aid developers in building such systems. Underlying these goals was the assumption that the tools needed to support such an effort, mainly Common Lisp, Portable Common Loops and TCP/IP, were adequate to do so. During the course of this work Symbiotics found several short-comings in these software tools and identified a need for higher level tools to facilitate distributed processing development. This report documents that work and the results of the Phase I effort.

1332983/7
1332983   N88-23083/4/XAB
   Strategies for Concurrent Processing of Complex Algorithms in Data Driven Architectures
   Stoughton, J. W. ; Mielke, R. R.
   Old Dominion Univ., Norfolk, VA.
   Corp. Source Codes: 045163000; OS853217
   Sponsor: National Aeronautics and Space Administration, Washington, DC.
   Report No.: NAS 1.26:181657; NASA-CR-181657
   Feb 88   73p
   Languages: English
   Journal Announcement: GRAI8819; STAR2616
   NTIS Prices: PC A04/MF A01
   Country of Publication: United States
   Contract No.: NAG1-683
   Research directed at developing a graph theoretical model for describing data and control flow associated with the execution of large grained algorithms in a special distributed computer environment is presented. This model is identified by the acronym ATAMM which represents Algorithms To Architecture Mapping Model. The purpose of such a model is to provide a basis for establishing rules for relating an algorithm to its execution in a multiprocessor environment. Specifications derived from the model lead directly to the description of a data flow architecture which is a consequence of the inherent behavior of the data and control flow described by the model. The purpose of the ATAMM based architecture is to provide an analytical basis for performance evaluation. The ATAMM model and architecture specifications are demonstrated on a prototype system for concept validation.

1332768/7.
1332768   DE88008019/XAB
   Graphical Multiprocessing Analysis Tool (GMAT)
   Seager, M. K. ; Campbell, S. ; Sikora, S. ; Strout, R. ; Zosel, M.
   Lawrence Livermore National Lab., CA.
   Corp. Source Codes: 068147000; 9513035
   Sponsor: Department of Energy, Washington, DC.

Report No.: UCID-21348; ISCR-87-2
Mar 88   47p
Languages: English
Journal Announcement: GRAI8819; NSA1300
NTIS Prices: PC A03/MF A01
Country of Publication: United States
Contract No.: W-7405-ENG-48

The design and debugging of parallel programs is a
difficult task due to the complex synchronization and data
scoping issues involved to aid the programmer in parallel code
development we have developed two methodologies for the
graphical   display   of execution of parallel codes. The
Graphical Multiprocessing   Analysis   Tools (GMAT) consist
of stategraph, which represents an inheritance tree of
task   states,   and timeliness, which represents task   as
flowing sequence of events. Information about the code can be
displayed as the application runs (dynamic mode) or played
back with   time   under   user control (static mode). This
document discusses the design and   user   interface issues
involved in developing the parallel application display GMAT
family. Also, we present an introductory user's guide for both
tools. 4 figs. (ERA citation 13:032031)

1332523/7
1332523 AD-A194 128/5/XAB
  Cauldrons: An Abstraction for Concurrent Problems Solving.
Revision   (Memorandum rept.)
  Haase, K.
Massachusetts   Inst.   of Tech.,   Cambridge.   Artificial
Intelligence Lab.
  Corp. Source Codes: 001450241; 407483
  Report No.: AI-M-673
  Sep 86   .45p
  Languages: English
  Journal Announcement: GRAI8819
  Revision of report dated Dec 82.
  NTIS Prices: PC A03/MF A01
  Country of Publication: United States
  Contract No.: N00014-79-C-0260

The   abstractions   we   have for serial programming are
powerful: concepts like   data   types, variable binding,
generalized operators, the subroutine. We   do   not yet have
the   same   sort   of powerful abstractions for distributed
computation,   but   I   believe   that   the place to look for
them is the same place that we found many of our abstractions
for serial computation--in our own   minds.   This   research
extends a tradition of distributed theories of mind into the
implementation   of   a distributed problem solver. In this
problem   solver   a   number   of ideas   from Minsky's Society
of Mind are implemented   and   are   found   to   provide
powerful abstractions for the programming of distributed
systems. These abstractions are the cauldron, a mechanism for
instantiating   reasoning   contexts,   the   frame,   a way of
modularly   describing   those   contexts   and   the goal-mode,

a mechanism for bringing a particular context to bear on a specific task. The implementation of both these abstractions and the distributed problem solver in which they run is described, accompanied by examples of their application to various domains.

1332050/7
1332050   AD-A193 648/3/XAB
  Combined And-Or Parallel Execution of Logic Programs
  Gupta, G. ; Jayaraman, B.
  North Carolina Univ. at Chapel Hill. Dept. of Computer Science.   Corp. Source Codes: 045592060; 409668
  Report No.: TR88-012
  Mar 88   23p
  Languages: English
  Journal Announcement: GRAI8819
  NTIS Prices: PC A03/MF A01
  Country of Publication: United States
  Contract No.: N00014-86-K-0680; NSF-DCR86-03609
  A number of approaches have recently been proposed for the parallel execution of logic programming languages, but most of them deal with either or-parallelism or and-parallelism but not both. This paper describes a high-level design for efficiently supporting both and-parallelism and or-parallelism. Our approach is based on the binding arrays method for or-parallelism and the RAP method for and-parallelism. Extensions to the binding-arrays method are proposed in order to achieve constant access-time to variables in the presence of and-parallelism. The RAP (Restricted And-Parallelism) method becomes simplified because backtracking is unnecessary in the presence of or-parallelism. The author's approach has the added effect of eliminating redundant computations when goals exhibit both and-and or-parallelism. The paper first briefly describes the basic issues in pure and-parallelism and or-parallelism, states desirable criteria for their implementation (with respect to variable access, task creation and switching), and then describes the combined and-or implementation.

1331894/7
1331894   AD-A193 465/2/XAB
  Programming Language Concepts for Multiprocessors
  (Interim rept.)
  Jordan, H. F.
  Colorado Univ. at Boulder. Computer Systems Design Group.
  Corp. Source Codes: 068646038; 418831
  Report No.: CSDG-87-4; ECE-TR-87-1-3
  Sep 87   14p
  Languages: English
  Journal Announcement: GRAI8819
  NTIS Prices: PC A03/MF A01
  Country of Publication: United States
  Contract No.: N00014-86-K-0204

It is currently possible to build multiprocessor
systems which will support the tightly coupled activity of
hundreds to thousands of different instruction streams, or
processes. This can be done by coupling many
monoprocessors, or a smaller number of pipelined
multiprocessors, through a high concurrency switching
network. The switching network may be couple processors to
memory modules, resulting in a shared memory multiprocessor
system, or it may couple processor/memory pairs, resulting in
a distributed memory system. The need to direct the
activity of very many processes simultaneously places
qualitatively different demands on a programming language
than the direction of a single process. In spite of the
different requirements, most languages for
multiprocessors have been simple extensions of
conventional, single stream programming languages. The
extensions are often implemented by way of subroutine calls
and have little impact on the basic structure of the
language. This paper attempts to examine the underlying
conceptual structure of parallel languages for large scale
multiprocessors on the basis of an existing language for
shared memory multiprocessors, known as the FORCE, and to
extend the concepts in this language to distributed memory
systems.

  The FORCE is a parallel programming language and methodology
based on the shared memory multiprocessor model of
computation. It is an extension to Fortran which allows a user
to write a parallel program that is independent of the
number of processes executing it and in which the
management of processes is suppressed. Multiple
instruction streams are managed as a group by operations
that synchronize them and allocate work. The system is
implemented on several machines as a macro preprocessor which
expands FORCE programs into Fortran code for the host system.

?   t   1331037/7;t   1329890/7;t   1329055/7;t   1328670/7;t
1326261/7;t 1321106/7;t 1320158/7

1331037/7
1331037   PB88-203997/XAB
  Distributed Application Programming with Extended Prolog
(Distribuerad Applikationsprogrammering med Utvidgad Prolog)
  Stroemberg, D.
  Foersvarets Forskningsanstalt, Stockholm (Sweden).
  Corp. Source Codes: 063330000
  Report No.: FOA-B-30121-3.3
  Jan 88   31p
  Languages: English
  Journal Announcement: GRAI8818
  NTIS Prices: PC E03/MF A01
  Country of Publication: Sweden
  Many   tasks   in   office   oriented environments engage
several experts and office   workers.   The   increasing   use
of workstation based tools for such tasks calls for simpler
and more appropriate ways to specify program distribution
and user communication. The authors propose a facility to
specify such task sharing. The main point in the
approach is the localization term, which is an extension
to a Prolog-like language. This allows us to describe a
multi-user application as one unified program instead of as
a set of distributed single-user programs.

1329890/7
1329890   AD-A193 297/9/XAB
  Poker   on   the   Cosmic   Cube: The First Retargetable
Parallel Programming Language and Environment   (Technical
rept.)
  Snyder, L. ; Socha, D.
  Washington Univ., Seattle. Dept. of Computer Science.
  Corp. Source Codes: 005042231; 395224
  Report No.: TR-86-02-05
  Jun 86   17p
  Languages: English
  Journal Announcement: GRAI8818
  Sponsored in part by Contract N00014-85-K-0328.
  NTIS Prices: PC A03/MF A01
  Country of Publication: United States
  Contract No.: N00014-86-K-0264; NSF-DCR84-16878
  This paper describes a technique for retargetting
Poker, the first complete parallel programming environment,
to new parallel architectures. The   specifics   are
illustrated   by   describing   the   retarget of Poker to
CalTech's Cosmic Cube. Poker requires only three features
from the target architecture: MIMD operation, message passing
inter-process communication, and a sequential language
(e.g. C) for the processor elements. In return Poker gives
 the new architecture a complete parallel programming
environment   which   will   compile   Poker   parallel
programs without modification, into efficient object code for
the new architecture.

1329055/7
1329055   PB88-201769/XAB
  Optimal Database Allocation in Distributed Computer Network
Systems
  Inamoto, A.
  Mitsubishi Electric Corp., Tokyo (Japan).
  Corp. Source Codes: 076350000
  c1987   4p
  Languages: Japanese
  Journal Announcement: GRAI8817
  Text in Japanese.
  Included in Mitsubishi Denki Giho, v61 n12 p26-29 1987.
  NTIS Prices: (Order as PB88-201751, PC E04/MF A01)
  Country of Publication: Japan
  The   report   concerns optimal database allocation and
optimal location of processors   in   the   distributed
processing networks used for sales and product distribution
management systems. The problems are formulated, and a
mathematical methodology for solving these problems is
presented. To minimize the system expense, the
methodology is used to analyze the hardware cost of the
distributed processors, the cost of the magnetic disk drive
for database storage, the cost of communications over
a packet switching network, and the cost of leased lines.

  1328670/7
1328670   N88-21688/2/XAB
  Distributed Operating Systems: An Overview
  Aksit, M.
  Technische Univ. Twente, Enschede (Netherlands). Dept.
of Computer Science.
  Corp. Source Codes: 090700004; TJ309982
  Sponsor: National Aeronautics and Space Administration,
Washington, DC.
  Report No.: INF-87-29; ETN-88-91830
  Oct 87   26p
  Languages: English
  Journal Announcement: GRAI8817; STAR2614
  NTIS Prices: PC A03/MF A01
  Country of Publication: Netherlands
  Layered   systems, operating systems, and distributed
computer systems are defined.   The   differences   between
parallel and distributed processing are identified. Existing
distributed operating systems are listed. Distributed
operating system design issues are summarized.

  1326261/7
1326261   PB88-865043/XAB
  Computer Networks: Data Communication Architecture and
Development. January   1975-May 1988 (Citations from the
INSPEC: Information Services for the Physics and Engineering
Communities Database)   (Rept. for Jan 75-May 88)
  National Technical Information Service, Springfield, VA.
  Corp. Source Codes: 055665000

Jun 88   147p
Languages: English   Document Type: Bibliography
Journal Announcement: GRAI8816
Supersedes PB87-858429.
NTIS Prices: PC N01/MF N01
Country of Publication: United States
This   bibliography   contains   citations   concerning
architecture and development of computer networks for
data communication systems. Data network design, operation,
performance analysis, reliability, security, maintenance and
evolution are discussed. Techniques of packet switched and
distributed data communication networks are presented.
Applications of data communication technology are included.
(This updated bibliography contains 345 citations, 22 of which
are new entries to the previous edition.)

1321106/7
1321106 AD-A190 956/3/XAB
UNIX Based Programming Tools for Locally Distributed Network
Applications   (Master's thesis)
Frank, W. C.
Naval Postgraduate School, Monterey, CA.
Corp. Source Codes: 019895000; 251450
Dec 87   105p
Languages: English   Document Type: Thesis
Journal Announcement: GRAI8815
NTIS Prices: PC A06/MF A01
Country of Publication: United States
The   Graphics   and Video Laboratory of the Department of
Computer Science has a growing need for easy to use
programming   tools in support of distributed processing
applications. The most pressing need is for software on three
UNIX-based   workstations   connected   via   Ethernet.   The
remote interprocess communication tools that UNIX provides
for using Ethernet are effective but complicated to learn.
This requires researchers to spends
much of their time becoming proficient with them instead of
concentrating on the distributed application at hand. This
work presents the design and implementation   of   several
programming tools that allow programmers to establish   and
experiment with distributed programs in the graphics
laboratory environment. The tools allow a higher level of
abstraction for remote interprocess communications and
establish a straightforward method for   implementing
distributed   programs. Additionally,   they support code
reuseability with software templates and are modularized
to be both understandable and changeable. Recommendations are
made for future research and management efforts that have been
highlighted by these new tools.

1320158/7
1320158 N88-19147/3/XAB
Distributed Computation of Graphics Primitives on a

Transputer Network
  Ellis, G. K.
  National   Aeronautics   and   Space   Administration,
Cleveland,   OH. Lewis Research Center.
  Corp. Source Codes: 019039001; ND315753
  Report No.: NAS 1.15:100814; ICOMP-88-3; NASA-TM-100814
  1988   7p
  Languages: English
  Journal Announcement: GRAI8814; STAR2611
  Prepared   for   Presentation   at   the   Summer   Computer
Simulation Conference, Seattle, Wash., 25-28 Jul. 1988;
Sponsored in Part by the Society for Computer Simulation.
  NTIS Prices: PC A02/MF A01
  Country of Publication: United States
  A   method   is   developed   for   distributing   the
computation of graphics primitives   on   a   parallel
processing network. Off-the-shelf transputer boards are used
to perform the graphics transformations and scan-conversion
tasks that would normally be assigned to a single transputer
based display processor. Each node in the network performs
a single graphics primitive
computation. Frequently requested tasks can be duplicated on
several nodes. The results indicate that the current
distribution of commands on the graphics network shows a
performance   degradation   when compared to the graphics
display board alone. A change to more computation per node
for every communication (perform more complex tasks on each
node) may cause the desired increase in throughput.

?   t   1314371/7;t   1314308/7;t   1312882/7;t   1312569/7;t
1306589/7;t 1306289/7;t 1302419/7

  1314371/7
1314371 N88-17312/5/XAB
  Systeme   de   Programmation   Parallele   Occam/Ada
(Occam/Ada Parallel Programming System)   (Doctoral thesis)
  Nekkache, M.
  Institut   National   des   Sciences   Appliquees   de   Lyon,
Villeurbanne (France).
Lab. d'Informatique Appliquee.
  Corp. Source Codes: 067950006; II354902
  Sponsor: National Aeronautics and Space Administration,
Washington, DC.
  Report No.: ISAL-IDI1-87-11; ETN-88-91630
  1987   133p
  Languages: French   Document Type: Thesis
  Journal Announcement: GRAI8812; STAR2609
  In French; English Summary.
  NTIS Prices: PC A07/MF A01
  Country of Publication: France
  A   programming   tool to specify and develop real time
applications in Ada language is presented. The Occam
system   was   chosen   as   a   basis and translated   into   Ada

language. Programming is regarded as a scheduling activity rather than a sequencing one. The problems involved included splitting systems in smaller parallel systems, synchronizing of the components, and mutual exclusion of shared variables. Application experience indicates that Occam may be considered a language for specification and development in Ada.

1314308/7
1314308   N88-17230/9/XAB
  Task Allocation in a Distributed Computing System
  Seward, W. D.
  Air Force Inst. of Tech., Wright-Patterson AFB, OH. Dept. of Electrical and Computer Engineering.
  Corp. Source Codes: 000805001; AI174479
  Sponsor: National Aeronautics and Space Administration, Washington, DC.
  Oct 87   9p
  Languages: English
  Journal Announcement: GRAI8812; STAR2609
  In NASA. Lyndon B. Johnson Space Center, Houston, Texas,First Annual Workshop on Space Operations Automation and Robotics (SOAR 87), p173-181.
  NTIS Prices: (Order as N88-17206/9, PC A23/MF A01)
  Country of Publication: United States
  A conceptual framework is examined for task allocation in distributed systems. Application and computing system parameters critical to task allocation decision processes are discussed. Task allocation techniques are addressed which focus on achieving a balance in the load distribution among the system's processors. Equalization of computing load among the processing elements is the goal. Examples of system performance are presented for specific applications. Both static and dynamic allocation of tasks are considered and system performance is evaluated using different task allocation methodologies.

1312882/7
1312882   AD-A189 569/7/XAB
  Why We Can't Program Multiprocessors the Way We're Trying to Do It Now   (Technical rept.)
  Baldwin, D.
  Rochester Univ., NY. Dept. of Computer Science.
  Corp. Source Codes: 010090065; 410386
  Report No.: TR-224
  Aug 87   36p
  Languages: English
  Journal Announcement: GRAI8812
  Sponsored in part by Grant NSF-DCR83-20136.
  NTIS Prices: PC A03/MF A01
  Country of Publication: United States
  Contract No.: DACA76-85-C-0001; NSF-DMC86-13489
  Parallel computation is an area in which software technology lags considerably behind hardware technology. The need for parallel computing in a number of applications

(e.g., scientific computing, machine vision, artificial intelligence) is unquestioned, and computers with hundreds of processors are now readily available (for instance, the Butterfly or the many derivatives of the Cosmic Cube). However, these machines are programmed in essentially the same way as existing sequential machines. The best available parallel programming languages are variants of standard sequential languages, with extensions to let the programmer explicitly divide a program into tasks and pass information between those tasks. Although designers of these languages claim that they are no harder to use than conventional sequential ones, programmers still face the problem of figuring out how to partition their application into tasks in addition to the usual problem of translating it into a program. An appealing alternative is to leave partitioning of programs to compilers. By hiding partitioning problems from programmers, this approach should make multi-processor computers easier to program than they are now. Unfortunately efforts to develop parallelizing compilers have so far been rather unsuccessful.

1312569/7
1312569   AD-A189 245/4/XAB
  Interface between Object-Oriented Systems   (Technical rept.)
  Crowl, L. A.
  Rochester Univ., NY. Dept. of Computer Science.
  Corp. Source Codes: 010090065; 410386
  Report No.: TR-211
  Apr 87   23p
  Languages: English
  Journal Announcement: GRAI8812
  NTIS Prices: PC A03/MF A01
  Country of Publication: United States
  Contract No.: DACA76-85-C-0001; NSF-DCR83-20136
  The Chrysalis operating system for the Butterfly Parallel Processor presents an object-oriented programming environment based on shared memory. However, because of Chrysalis's low level orientation and its use of type-unsafe features of the C programming language, programs using the environment are difficult to program and highly error-prone. Using C as the primary programming language for the Butterfly does not fully realize the benefit of Chrysalis's object orientation. An object-oriented programming language is natural candidate for improving the Chrysalis environment. The C ++ programming language provides a number of advantages in developing such an interface. This paper reports the successes and problems encountered in the development of Chrysalis ++, a C ++ interface to Chrysalis ++ uncovered many strengths and weakness in C ++. Some apply to C

++ in general, others apply only to its adaptation to a parallel programming environment. It is important to note that C++ is a sequential language; it is use in a parallel programming environment is therefore outside the bounds of its design.

1306589/7
1306589 AD-A188 142/4/XAB
  Implementing   Dynamic   Arrays: A   Challenge   for
High-Performance Machines
  Mago, G. ; Partain, W.
  North Carolina Univ. at Chapel Hill. Dept. of Computer
Science.   Corp. Source Codes: 045592060; 409668
  1986   3p
  Languages: English
  Journal Announcement: GRAI8810
  NTIS Prices: PC A02/MF A01
  Country of Publication: United States
  Contract No.: DAAL03-86-G-0050
  There   is   an   increasing   need for high-performance AI
machines. What is unusual   about   AI   is   that   its programs
are typically dynamic in the way their   execution   unfolds and
in the data structures they use. AI therefore needs machines
that are late-binding. Multiprocessors are often held out as
the   answer   to   AI's   computing   requirements. However, most
success with
multiprocessing   has   come   from   exploiting   numerical
computations' basic data structure-the   static   array (as in
FORTRAN). A static array's structure does not   change,   so
its   elements (and the processing on them) may be readily
distributed.   In AI, the ability to change and manipulate the
structure of data is paramount; hence, the pre-eminence of the
LISP   list.   Unfortunately,   the   traditional   pointer-based
list has serious drawbacks for distributed processing. The
dynamic array is a data structure that allows random access
to   its   elements   (like   static   arrays)   yet   whose
structure-size   and dimensions-can   be easily changed, i.e.,
bound and re-bound at run-time. It combines   the   flexibility
that   AI   requires   with the potential for high performance
through   parallel   operation.   A   machine's   implementation
of
dynamic   arrays   gives   a good insight into its potential
usefulness for AI applications.   Therefore,   the   authors
outline the implementation of dynamic arrays on a machine that
we are developing.

1306289/7
1306289 AD-A187 824/8/XAB
  Performance   Measurements   of   Distributed   Simulation
Strategies
  (Technical rept.)
  Fujimoto, R. M.
  Utah Univ., Salt Lake City. Dept. of Computer Science.
  Corp. Source Codes: 016669107; 404949

Although many distributed simulation strategies have been developed, to data, little empirical data is available to evaluate their performance. A multiprocessor-based, distributed simulation testbed is described that was designed to facilitate controlled experimentation with distributed simulation algorithms. Using this testbed, the performance of simulation strategies using deadlock avoidance and deadlock detection and recovery techniques was examined under various synthetic workloads. The distributed simulators were compared with a uniprocessor-based event list implementation. Results of a series of experiments are reported that demonstrate that message population and the degree to which processes can look ahead in simulated time play critical roles in the performance of distributed simulators using these algorithms. An avalanche phenomenon was observed in the deadlock detection and recovery simulators as message population was increased, and was found to be a necessary condition for achieving good performance. It is demonstrated that these distributed simulation algorithms can provide significant speedups over sequential event list implementations for some workloads, even in the presence of only a moderate amount of parallelism and many feedback loops. However, a moderate to high degree of parallelism was not sufficient to guarantee good performance for all workloads that were tested.

The impact of real time local area networks (LAN) on launchers is discussed. Communication needs of a launch vehicle that call for distributed processing techniques are reviewed. The design drivers of the system are

identified. A method to ensure the fulfillment of design
goals, i.e., to benefit from the potentials of real time LAN
is outlined.
? t 1297257/7;t 1291911/7;t 1291909/7;t 1285013/7

   1297257/7
1297257   N88-12287/4/XAB
   Mapping   a   Battlefield   Simulation   onto
Message-Passing Parallel Architectures   (Final rept.)
   Nicol, D. M.
   National Aeronautics and Space Administration, Hampton,
VA. Langley Research Center.
   Corp. Source Codes: 019041001; ND210491
   Report No.: NAS 1.26:178396; ICASE-87-51; NASA-CR-178396
   Oct 87   18p
   Languages: English
   Journal Announcement: GRAI8806; STAR2603
   NTIS Prices: PC A03/MF A01
   Country of Publication: United States
   Contract No.: NAS1-18107
   Perhaps   the   most   critical problem in distributed
simulation is that of mapping: without an effective mapping
of workload to processors the speedup potential of parallel
processing cannot be realized. Mapping a simulation onto a
message-passing architecture is especially difficult when
the computational workload dynamically changes as a function
of time and space; this is exactly the situation faced by
battlefield simulations. This paper studies an   approach
where   the   simulated   battlefield   domain   is first
partitioned into many regions of equal size; typically
there are more regions than processors. The regions are
then assigned to processors; a processor is responsible for
performing all simulation activity associated with   the
regions. The assignment algorithm is quite simple and attempts
to balance load by exploiting locality of workload intensity.
The performance
of this technique is studied on a simple battlefield
simulation implemented on   the   Flex/32 multiprocessor.
Measurements   show   that   the   proposed   method achieves
reasonable processor efficiencies. Furthermore, the method
shows promise for use in dynamic remapping of the simulation.

   1291911/7
1291911   N88-11402/0/XAB
   Report from the MPP (Massively Parallel Processor) Working
Group to the NASA   (National   Aeronautics   and   Space
Administration) Associate Administrator for Space Science
and Applications. Technical Memorandum
Report, October 1, 1985-September 30, 1986
   Fischer, J. R. ; Grosch, C. ; McAnulty, M. ; ODonnell, J.
; Storey, O.
   National   Aeronautics   and   Space   Administration,
Greenbelt, MD. Goddard Space Flight Center.

Corp. Source Codes: 013129001; NC999967
Report No.: NAS 1.15:87819; REPT-87B0265;s jPT]5B;C Kj&h'oY
87   64p
Languages: English
Journal Announcement: GRAI8804; STAR2602
NTIS Prices: PC A04/MF A01
Country of Publication: United States
   NASA's Office of Space Science and Applications (OSSA)
gave a select group of scientists the opportunity to
test and implement their computational algorithms on the
Massively Parallel Processor (MPP) located at Goddard Space
Flight Center, beginning in late 1985. One year later, the
Working Group presented its report, which addressed
the following: algorithms, programming languages,
architecture, programming environments, the way theory
relates, and performance measured. The findings point to a
number of demonstrated computational techniques for
which the MPP architecture is ideally suited. For example,
besides executing much faster on the MPP than on conventional
computers, systolic VLSI simulation (where distances are
short), lattice simulation, neural network simulation, and
image problems were found to be easier to program on the MPP's
architecture than on a CYBER 205 or even a VAX. The
report also makes technical recommendations covering all
aspects of MPP use, and recommendations concerning the
future of the MPP and machines based on similar
architectures, expansion of the Working Group, and study
of the role of future parallel processors for space
station, EOS, and the Great Observatories era.

   1291909/7
1291909 N88-11398/0/XAB
   Cache-Based Error Recovery for Shared Memory Multiprocessor
Systems
   Wu, K. ; Fuchs, W. K. ; Patel, J. H.
   Illinois Univ. at Urbana-Champaign.
   Corp. Source Codes: 034597000; IB655059
   Sponsor: National Aeronautics and Space Administration,
Washington, DC.
   Report No.: NAS 1.26:181470; NASA-CR-181470
   20 Nov 87   21p
   Languages: English
   Journal Announcement: GRAI8804; STAR2602
   Sponsored in cooperation with Texas Instruments, Inc.
and Digital Equipment Corp. Presented at FTCS 18, Tokyo,
Japan, June 27-30, 1987.
   NTIS Prices: PC A03/MF A01
   Country of Publication: United States
   Contract No.: NAG1-613
   The problem of recovering from processor failures in
shared memory multiprocessor systems is examined. A
cache-based checkpointing scheme is developed utilizing a
checkpointing algorithm which guarantees that a consistent
global state is always maintained. Processes can recover

from errors due to a faulty processor by restarting from
the consistent saved computation state. There are no
difficulties with checkpoint propagation in that when a
process p takes a checkpoint, no other process is forced to
join p in the checkpoint. The recovery algorithm
allows only those processes encountering errors to
perform rollback recovery while other unaffected processes
on fault free processors continue normal execution.
The checkpointing recovery schemes are shown to be easily
integrated into standard bus-based cache coherence
protocols. An analytical model is used to estimate the
checkpointing frequency and the performance degradation
incurred by the checkpointing scheme during normal execution.

   1285013/7
1285013 AD-A184 969/4/XAB
   Test and Evaluation of the Transputer in a Multi-Transputer
System   (Master's thesis)
   Filho, J. V.
   Naval Postgraduate School, Monterey, CA.
   Corp. Source Codes: 019895000; 251450
   Jun 87   200p
   Languages: English   Document Type: Thesis
   Journal Announcement: GRAI8802
   NTIS Prices: PC A09/MF A01
   Country of Publication: United States
   The purpose of this thesis is to start the evaluation of
the Transputer, a 32 bit microprocessor on a chip, to verify
its potentials and limitations for real time applications,
in distributed systems. The evaluation concentrates on
the four physical communication links, and its advertised
capability to operate in parallel with the main processor
(CPU), each one
of them at rate of 10 mbit/sec in each direction. It also
presents to the reader an introduction to the machine
itself, to the Occam Programming Language, a description of
the environment at the Naval Postgraduate School (NPS), and
suggests to the novice a learning sequence. The evaluation
programs and other example programs presented in this
thesis were implemented using the Occam Programming
Language (Proto-Occam) in either
the Occam Programming System (OPS) or the Transputer
Development System (TDS), both resident on the VAX 11/780
computer under the VMS Operating System (VAX/VMS).
? t   1277155/7;t   1276980/7;t   1273325/7;t   1269040/7;t
1267878/7;t 1264037/7;t 1254966/7

   1277155/7
1277155 PB87-867958/XAB
   DECNET: Digital   Equipment   Corporation   Network
Architecture. January 1976-September 1987 (Citations from
the INSPEC: Information Services for the Physics and

Engineering Communities Database)   (Rept. for Jan 76-Sep 87)
   National Technical Information Service, Springfield, VA.
   Corp. Source Codes: 055665000
   Oct 87   44p
   Languages: English   Document Type: Bibliography
   Journal Announcement: GRAI8723
   Supersedes PB86-877123.
   NTIS Prices: PC N01/MF N01
   Country of Publication: United States
   This bibliography contains citations concerning the network
architecture DECNET provided by the Digital Equipment
Corporation.   Topics include hardware and software for
implementing communications between different computer
operating systems.   DECNET's ability to create resource
sharing, communications networks, and distributed computing
is examined by employing specialized protocol layers which
serve the functions of network control, data access control,
interprogram communications, and automatic error detection
and retransmission. Applications for medical information
systems, chemical laboratories, electronic mail systems,
and industrial process control are presented. (This updated
bibliography contains 86 citations, 28 of which are new
entries to the previous edition.)

   1276980/7
   1276980   PB87-226098/XAB
   Network Protocols: Proceedings of the Joint IBM
(International Business Machines)/University of Newcastle
upon Tyne Seminar Held in the University Computing Laboratory,
September 3-6, 1985
   Randell, B.
   Newcastle upon Tyne Univ. (England). Computing Lab.
   Corp. Source Codes: 020410010
   c1986   279p
   Languages: English   Document Type: Conference proceeding
   Journal Announcement: GRAI8723
   NTIS Prices: PC E12/MF E12
   Country of Publication: United Kingdom
   Contents: The performance of LAN protocols; Open systems
interconnection communication architecture;   Realization
of open systems; Electronic messaging; Another look at
computer communication protocols; Computerized commerce; High
layer protocol standardization for distributed processing; IBM
logical unit type 6.2--An overview; Verifying a protocol
algebraically
using CCS; Communication architectures for distributed
systems; The state of the art in testing protocol
implementations; Notes on automated protocol analysis;
Standardization for open systems; On protocol engineering.

   1273325/7
   1273325   N87-26568/2/XAB
   Network Protocols for Real-Time Applications
   Johnson, M. J.

   The Fiber Distributed Data Interface (FDDI) and the SAE
AE-9B High Speed Ring Bus (HSRB) are emerging standards
for high-performance token ring local area networks.
FDDI was designed to be a general-purpose
high-performance network. HSRB was designed specifically
for military real-time applications. A workshop was
conducted at NASA Ames Research Center in January, 1987
to compare and contrast these protocols with respect to
their ability to support real-time applications. This report
summarizes workshop presentations and includes an independent
comparison of the two protocols. A conclusion reached at
the workshop was that current protocols for the upper
layers of the Open Systems Interconnection (OSI)
network model are inadequate for real-time applications.

   1269040/7
1269040 AD-A182 513/2/XAB
   CRONUS, A Distributed Operating System: CRONUS DOS
Implementation (Final rept. Oct 84-Jan 86)
   Schantz, R. ; Schroder, K. ; Barrow, M. ; Bono, G. ; Dean,
M.
   This is the final report for the second contract phase for
development of the CRONUS Project. CRONUS is the name given
to the distributed operating system (DOS) and system
architecture for distributed application development
environment being designed and implemented by BBN Laboratories
for the Air Force Rome Air Development Center (RADC). The
project was begun in 1981. The CRONUS distributed
operating system is intended to promote resources which are
shared. Its major purpose is to provide a coherent and
integrated system based on clusters of interconnected
heterogeneous computers to support the development and use
of distributed applications. Distributed applications range
from simple programs that merely require

convenient reference to remote data, to collections of complex subsystems tailored to take advantage of a distributed architecture. One of the main contributions of CRONUS is a unifying architecture and model for developing these distributed applications; as well as support for a number of
system-provided functions which are common to many applications.

1267878/7
1267878 N87-24949/6/XAB
  New Technology Impacts on Future Avionics Architectures
  Mejzak, R. S.
  Naval Air Development Center, Warminster, PA.
  Corp. Source Codes: 032381000; NO000154
  Sponsor: National Aeronautics and Space Administration, Washington, DC.
  c1987   7p
  Languages: English
  Journal Announcement: GRAI8720; STAR2518
  In AGARD Advanced Computer Aids in the Planning and Execution of Air Warfare and Ground Strike Operations, 7p.
  NTIS Prices: (Order as N87-24940 PC A07/MF A01)
  Country of Publication: United States
  An interpretation of avionics architecture is provided with respect to system components, organization, and design factors. Initially, general avionics architecture characteristics are addressed followed by discussions on emerging technologies and their impact on advanced systems. Information handling requirements are projected for future tactical aircraft. In addition, advanced avionics architecture design consideration and technical issues are addressed relative to achieving improved performance, reliability, survivability, flexibility, and low life cycle cost.

1264037/7
1264037 DE87008229/XAB
  Effect of Distributed Computing Technology on Wide Area Network Capacity Requirements
  Hall, D. ; Johnston, W. ; Hutchinson, M. ; Rosenblum, M. ; Robertson, D.
  Lawrence Berkeley Lab., CA.
  Corp. Source Codes: 086929000; 9513034
  Sponsor: Department of Energy, Washington, DC.
  Report No.: LBL-22948; CONF-870277-1
  Feb 87   12p
  Languages: English   Document Type: Conference proceeding
  Journal Announcement: GRAI8719; NSA1200
  Federal Coordinating Council on science, engineering and technology, San Diego, CA, USA, 17 Feb 1987.
  Portions of this document are illegible in microfiche products.   NTIS Prices: PC A02/MF A01
  Country of Publication: United States

Contract No.: AC03-76SF00098

This report identifies a need to increase wide area network capacity by as much as three orders of magnitude over the next ten years. These increases are necessary to support new distributed computing products. Such products increase productivity, but are currently available only on local area networks. There is no technical reason for limiting these products to tightly constrained geographical areas, however. They can operate perfectly well over any terrestrial distance provided sufficient bandwidth is available. Such bandwidth is available today with fiber optics. To quantify capacity requirements, network traffic generated by this newer technology is compared with traditional traffic in a local network environment. An extrapolation to wide area networks is made. Speculation about the long term future of distributed computing technology and its effect on network capacity requirements is offered. It is argued that an increase of network capacity by one order of magnitude is sufficient to accommodate new distributed computing technology on existing wide area networks. Two orders of magnitude are needed to accommodate a fully integrated distributed system such as interactive graphics. Three orders of magnitude are needed to accommodate increases in hardware speed anticipated in the next five to ten years. Availability of highly integrated, nationwide distributed computing service would significantly increase the competitive edge of the United States in science and computing. (ERA citation 12:028235)

1254966/7
1254966   DE87003740/XAB
  Numerical Computation on Massively Parallel Hypercubes
  McBryan, O. A.
  Los Alamos National Lab., NM.
  Corp. Source Codes: 072735000; 9512470
  Sponsor: Department of Energy, Washington, DC.
  Report No.: LA-UR-86-4218; CONF-8609173-9
  1986   20p
  Languages: English   Document Type: Conference proceeding
  Journal Announcement: GRAI8716; NSA0000
  Conference on hypercube multiprocessors, Knoxville, TN, USA,
29 Sep 1986.
  NTIS Prices: PC A02/MF A01
  Country of Publication: United States
  Contract No.: AC02-76ER03077; W-7405-ENG-36

We describe numerical computations on the Connection Machine, a massively parallel hypercube architecture with 65,536 single-bit processors and 32 Mbytes of memory. A parallel extension of COMMON LISP, provides access to the processors and network. The rich software environment is further enhanced by a powerful virtual processor capability, which extends the degree of fine-grained parallelism beyond 1,000,000. We briefly describe the hardware and indicate the principal features of the

parallel programming environment. We then present
implementations of SOR, multigrid and pre-conditioned
conjugate gradient algorithms for solving partial
differential equations on the Connection Machine.
Despite the lack of floating point hardware, computation
rates above 100 megaflops have been achieved in PDE solution.
Virtual processors prove to be a real advantage,
easing the effort of software development while
improving system performance significantly. The software
development effort is also facilitated by the fact that
hypercube communications prove to be fast and essentially
independent of distance. 29 refs., 4 figs.
? t 1249337/7;t 1247084/7;t 1227996/7;t 1227984/7;t
1218318/7;t 1216028/7;t 1214434/7

1249337/7
1249337 PB87-858429/XAB
  Computer Networks: Data Communication Architecture and
Development. January 1975-April 1987 (Citations from the
INSPEC: Information Services for the Physics and Engineering
Communities Database) (Rept. for Jan 75-Apr 87)
  National Technical Information Service, Springfield, VA.
  Corp. Source Codes: 055665000
  Apr 87   135p
  Languages: English   Document Type: Bibliography
  Journal Announcement: GRAI8713
  Supersedes PB86-862703.
  NTIS Prices: PC N01/MF N01
  Country of Publication: United States
  This bibliography contains citations concerning
architecture and development of computer networks for
data communication systems. Data network design, operation,
performance analysis, reliability, security, maintenance and
evolution are discussed. Techniques of packet switched and
distributed data communication networks are presented.
Applications of data communication technology are included.
(This updated bibliography contains 323 citations, 37 of which
are new entries to the previous edition.)

1247084/7
1247084 AD-A178 975/9/XAB
  Durra: A Task-Level Description Language Preliminary
Reference Manual   (Final rept.)
  Barbacci, M. R. ; Wing, J. M.
  Carnegie-Mellon Univ., Pittsburg, PA. Software Engineering
Inst.   Corp. Source Codes: 005343014; 416208
  Sponsor: Electronic Systems Div., Hanscom AFB, MA.
  Report No.: CMU/SEI-86-TR-3; ESD-TR-86-207
  Dec 86   49p
  Languages: English
  Journal Announcement: GRAI8713
  NTIS Prices: PC A03/MF A01
  Country of Publication: United States

Contract No.: F33615-84-K-1520; ARPA Order-4976

Durra is a language designed to support the development of large-grained parallel programming applications. This document is a preliminary reference manual for the syntax and semantics of the language. We are using the term description language rather than programming language to emphasize that a task-level application description is not translated into object code of some kind of executable machine language. Rather, it is to be understood as a description of the structure and behavior of a logical machine, that will be synthesized into resource allocation and scheduling directives. These directives are to be interpreted by a combination of software, firmware, and hardware in a heterogeneous machine. Although our ultimate goal is to design and implement a task-level description language that can be used for different machines and for varying applications, our first pass is influenced by both a specific architecture and by a specific application, the Autonomous Land Vehicle (ALV), and more specifically, the perception components of the ALV. We assume there is a cross-bar switch, intelligent buffers on the switch sockets, and a scheduler that can communicate with all processors, buffers, and I/O devices.

1227996/7
1227996 N87-12270/1/XAB
ELAND: An Expert System for the Configuration of Local Area Networks Applications
Tanca, L. ; Ceri, S.
Politecnico di Milano (Italy).
Corp. Source Codes: 016875000; PX565076
Sponsor: National Aeronautics and Space Administration, Washington, DC.
Report No.: REPT-86-008; ETN-86-97941
1986 30p
Languages: English
Journal Announcement: GRAI8705; STAR2503
NTIS Prices: PC A03/MF A01
Country of Publication: Italy

A rule-based expert system for configuring Local Area Networks (LAN) and for designing distributed database applications over them is described. The system includes a general-purpose inference machine for solving synthesis problems, based on two separed modules: the Tree Traversal and the Matcher. The former performs a recursive descent on a tree-structured solution space
and generates a description of requirements that the final solution should posses; the latter matches these requirements to existing commercial products. The inference machine and its concrete application to the design and configuration of LAN information systems are described.

1227984/7
1227984 N87-12247/9/XAB

Parallel Scheduling of Recursively Defined Arrays
(Final rept)
Myers, T. J. ; Gokhale, M. B.
National Aeronautics and Space Administration, Hampton,
VA. Langley Research Center.
  Corp. Source Codes: 019041001; ND210491
  Report No.: NAS 1.26:178195; ICASE-86-66; NASA-CR-178195
  Oct 86   26p
  Languages: English
  Journal Announcement: GRAI8705; STAR2503
  NTIS Prices: PC A03/MF A01
  Country of Publication: United States
  Contract No.: NAS1-18107; UDRF-LTR860114

A new method of automatic generation of concurrent
programs which constructs arrays defined by sets of
recursive equations is described. It is assumed that the
time of computation of an array element is a linear
combination of its indices, and integer programming is
used to seek a succession of hyperplanes along which
array elements can be computed
concurrently. The method can be used to schedule
equations involving variable length dependency vectors and
mutually recursive arrays. Portions of the work reported here
have been implemented in the PS automatic program generation
system.

  1218318/7
1218318 N86-31261/8/XAB
  Optimal Partitioning of Random Programs Across Two
Processors
  (Final rept)
  Nicol, D. M.
National Aeronautics and Space Administration, Hampton,
VA. Langley Research Center.
  Corp. Source Codes: 019041001; ND210491
  Report No.: NAS 1.26:178159; ICASE-86-53; NASA-CR-178159
  Aug 86   27p
  Languages: English
  Journal Announcement: GRAI8626; STAR2422
  NTIS Prices: PC A03/MF A01
  Country of Publication: United States
  Contract No.: NAS1-18107

The optimal partitioning of random distributed programs is
discussed. It is concluded that the optimal partitioning of
a homogeneous random program over a homogeneous distributed
system either assigns all modules to a single processor,
or distributes the modules as evenly as possible among all
processors. The analysis rests heavily on the
approximation which equates the expected maximum of a set of
independent random variables with the set's maximum
expectation. The results are strengthened by providing an
approximation-free proof of this result for two processors
under general conditions on the module execution time
distribution. It is also shown that use of this approximation

causes two of the previous central results to be
false.

1216028/7
1216028   N86-30379/9/XAB
  Dynamic Remapping of Parallel Computations with Varying
Resource Demands   (Final rept)
  Nicol, D. M. ; Saltz, J. H.
  National Aeronautics and Space Administration, Hampton,
VA. Langley Research Center.
  Corp. Source Codes: 019041001; ND210491
  Report No.: NAS 1.26:178150; ICASE-86-45; NASA-CR-178150
  Jul 86   56p
  Languages: English
  Journal Announcement: GRAI8625; STAR2421
  NTIS Prices: PC A04/MF A01
  Country of Publication: United States
  Contract No.: NAS1-17070; NAS1-18107

  A   large   class   of   computational   problems   is
characterized by frequent synchronization, and computational
requirements which change as a function of time.   When such
a   problem   must   be   solved   on   a   message passing
multiprocessor   machine,   the   combination   of   these
characteristics lead to system performance which decreases
in   time.   Performance can be improved with periodic
redistribution of computational load; however, redistribution
can exact a sometimes large delay cost. We study the issue of
deciding when to invoke a global load remapping mechanism.
Such a decision policy must effectively weigh the costs of
remapping against the performance benefits. We   treat   this
problem   by constructing two analytic models which exhibit
stochastically decreasing performance. One model is quite
tractable; we are able   to describe the optimal remapping
algorithm, and the optimal decision policy governing when
to invoke that algorithm. However, computational complexity
prohibits the use of the optimal remapping decision policy.
We
then study the performance of a general remapping policy on
both analytic models. This   policy   attempts to minimize a
statistic W(n) which measures the   system   degradation
(including the cost of remapping) per computation step over
a   period of n steps. We show that as a function of time,
the expected value of W(n) has at most one minimum, and that
when this minimum exists it defines the optimal fixed-interval
remapping policy. Our decision policy appeals to this result
by remapping when it estimates that W(n) is minimized. Our
performance data suggests that this policy effectively finds
the   natural   frequency   of   remapping.   We also use the
analytic models to express   the relationship between
performance and remapping cost, number of processors, and the
computation's stochastic activity.

1214434/7
1214434   N86-29550/8/XAB

Approximate Algorithms for Partitioning and Assignment Problems   Iqbal, M. A.

National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.

Corp. Source Codes: 019041001; ND210491

Report No.: NAS 1.26:178130; ICASE-86-40; NASA-CR-178130

Jun 86   31p

Languages: English

Journal Announcement: GRAI8624; STAR2420

NTIS Prices: PC A03/MF A01

Country of Publication: United States

Contract No.: NAS1-17070; NAS1-18107

The problem of optimally assigning the modules of a parallel/pipelined program over the processors of a multiple computer system under certain restrictions on the interconnection structure of the program as well as the multiple computer system was considered. For a variety of such programs it is possible to find linear time if a partition of the program exists in which the load on any processor is within a certain bound. This method, when combined with a binary search over a finite range, provides an approximate solution to the partitioning problem. The specific problems considered were: a chain structured parallel program over a chain-like computer system, multiple chain-like programs over a host-satellite system,
and a tree structured parallel program over a host-satellite system. For a problem with m modules and n processors, the complexity of the algorithm is no worse than $O(mn\log(W \text{ sub } T/\text{epsilon}))$, where W sub T is the cost of assigning all modules to one processor, and epsilon the desired accuracy.

? t 1183966/7

1183966/7
1183966   PB86-862703/XAB
Computer Networks: Data Communication Architecture and Development. 1975-March 1986 (Citations from the INSPEC: Information Services for the Physics and Engineering Communities Database) (Rept. for 1975-Mar 86)

National Technical Information Service, Springfield, VA.

Corp. Source Codes: 055665000

Apr 86   210p

Languages: English   Document Type: Bibliography

Journal Announcement: GRAI8611

Supersedes PB85-859098.

NTIS Prices: PC N01/MF N01

Country of Publication: United States

This bibliography contains citations concerning architecture and development of computer networks for data communication systems. Data network design, operation, performance analysis, reliability, security, maintenance, and evolution are discussed. Techniques of packet switched and distributed data communication networks are presented.

Applications of data communication technology are included. (This updated bibli
ography contains 286 citations, 32 of which are new entries to the previous edition.)

APPENDIX D

SUBJECT   CARNEGIE MELLON

TITLE   BRIDGE

AUTHOR(S)   VARIOUS

PUBLISHER   CARNEGIE MELLON UNIVERSITY
DATE OF PUBLICATION   WINTER 1989   VOL 3 #1
PAGE NUMBER   18
FILE #   D - 09

SUBJECT   CARNEGIE MELLON

TITLE   SEI OVERVIEWS

AUTHOR(S)   VARIOUS

PUBLISHER   CARNEGIE MELLON UNIVERSITY
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SUBJECT   CARNEGIE MELLON

TITLE   1 JAN 1986 - 22 JUNE 1989
ANNOTATED LIST OF AVAILABLE
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