

PROJECT ADMINISTRATION DATA SHEET

ORIGINAL

REVISION NO.

Project No. E-24-643

DATE 10/21/81

Project Director: Dr. W. B. Rouse

School/Lab ISyE

Sponsor: University of Illinois; Champaign, Illinois 61820

Type Agreement: Subcontract No. 81-123 under Army Prime Contract No. MDA903-79-C-0421

Award Period: From 8/21/81 To 7/20/82 (Performance) ----- (Reports)

Sponsor Amount: \$53,000 Contracted thru

Cost Sharing: None GTRI/GIT

Title: Human Problem Solving Performance in Fault Diagnosis Tasks

ADMINISTRATIVE DATA

OCA Contact Duane Hutchison x4820

1) Sponsor Technical Contact:

Dr. R. T. Chien, Director  
Coordinated Science Laboratory  
College of Engineering  
University of Illinois at Urbana  
1101 West Springfield Avenue  
Champaign, Illinois 61820  
217/333-7474

2) Sponsor Admin/Contractual Matters:

Mr. William D. Morgan, Coordinator  
Grants & Contracts Office  
University of Illinois at Urbana  
105 Davenport House  
809 South Wright Street  
Champaign, Illinois 61820  
217/333-2186

Defense Priority Rating: DO-S1 under DMS Reg. 1

Security Classification: None

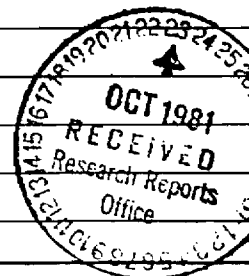
RESTRICTIONS

See Attached Government Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval - Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of \$500 or 125% of approved proposal budget category.

Equipment: Title vests with Government; except that items costing less than \$1,000 vests with GIT if prior approval to purchase is obtained from the Contracting Officer.

COMMENTS:



COPIES TO:

Administrative Coordinator

Research Security Services

EES Public Relations (2)

SPONSORED PROJECT TERMINATION SHEET

Date 8/24/82

Project Title: Human Problem Solving Performance in Fault Diagnosis Tasks

Project No: E-24-643

Project Director: Dr. W. B. Rouse

Sponsor: University of Illinois, Champaign, ILL

Effective Termination Date: 7/20/82

Clearance of Accounting Charges: 7/20/82

Grant/Contract Closeout Actions Remaining:

- Final Invoice and Closing Documents
- Final Fiscal Report
- Final Report of Inventions
- Govt. Property Inventory & Related Certificate
- Classified Material Certificate
- Other \_\_\_\_\_

Assigned to: ISyE (School/Laboratory)

COPIES TO:

- Administrative Coordinator
- Research Property Management
- Research Security Services Reports Coordinator (OCA)
- EES Public Relations (2)
- Computer Input

November 17, 1981

Dr. Richard Johnson  
Army Research Institute  
5001 Eisenhower Avenue  
Alexandria, VA 22333

Dear Rich:

Enclosed please find three copies of our quarterly report for the period July 22, 1981 - October 21, 1981. We regret the tardiness of this report, but the transition from Illinois to Georgia required quite a bit of coordination between the two accounting systems which resulted in a delay in determining the expenditures through October 21.

Sincerely,

William B. Rouse  
Professor and Director

WBR:1vs

cc: Dr. R. T. Chien

Enc.

HUMAN PROBLEM SOLVING PERFORMANCE IN FAULT DIAGNOSIS TASKS

William B. Rouse

Quarterly Report

For the Period July 22, 1981 - October 21, 1981

For

Contract MDA 903-79-C-0421

(July 22, 1979 - July 21, 1982)

Center for Man-Machine Systems Research

Georgia Institute of Technology

Atlanta, Georgia 30332

(404-894-3996)

During this reporting period, Ruston M. Hunt completed his Ph.D. thesis entitled "Human Pattern Recognition and Information Seeking in Simulated Fault Diagnosis Tasks." In this thesis, Hunt develops and evaluates a fuzzy rule-based model of human problem solving behavior. Perhaps the most interesting aspect of the model is the discrimination between pattern recognition (i.e., symptomatic search via S-rules) and information seeking (i.e., topographic search via T-rules). It was found that the model was able to match 50% of subjects' actions exactly and use the same rules as subjects approximately 70% of the time.

Also during this period further efforts were invested in analyzing the relationship between cognitive style and diagnostic behavior. A manuscript reviewing the literature in this area and reporting the related results of experiments nine and ten is currently being prepared.

Finally, initial efforts were started during this period in integrating the results of the ten experiments and four modeling efforts into an overall perspective of training and aiding human problem solving in fault diagnosis tasks.

As of October 21, 1981, approximately \$178,000 had been spent.

E 2--6

CENTER FOR MAN-MACHINE SYSTEMS RESEARCH

SCHOOL OF INDUSTRIAL AND SYSTEMS ENGINEERING

ATLANTA, GEORGIA 30332

(404) 394-399

*Deliverable #2  
E-24-643*

February 15, 1982

Dr. Richard Johnson  
Army Research Institute  
5001 Eisenhower Ave.  
Alexandria, VA 22333

Dear Rich:

Enclosed please find three copies of our quarterly report for the period October 22, 1981 - January 21, 1982.

Sincerely,

William B. Rouse  
Professor and Director

WBR:j

CC: Dr. R. T. Chien

Encl.

HUMAN PROBLEM SOLVING PERFORMANCE IN FAULT DIAGNOSIS TASKS

William B. Rouse

Quarterly Report

For the Period October 22, 1981 - January 21, 1982

For

Contract MDA 903-79-C-0421

(July 22, 1979 - July 21, 1982)

Center for Man-Machine Systems Research

Georgia Institute of Technology

Atlanta, Georgia 30332

(404-894-3996)

Most of this reporting period was devoted to writing manuscripts summarizing various results obtained in this program of research. Three manuscripts were completed and submitted to journals for review. These manuscripts were on performance measures, cognitive style, and mixed-fidelity training. A fourth manuscript on modeling of rule-based problem solving is near completion.

Also during this reporting period efforts were invested in extending our models of human problem solving behavior and developing methods for identification and evaluation of these models.

As of January 21, 1982 approximately \$206,000 had been spent.



E 2-10

CENTER FOR MAN-MACHINE SYSTEMS RESEARCH

SCHOOL OF INDUSTRIAL AND SYSTEMS ENGINEERING

ATLANTA, GEORGIA 30332

(404) 894-3996

May 3, 1982

Dr. Richard Johnson  
Army Research Institute  
5001 Eisenhower Ave.  
Alexandria, VA 22333

*Deliverable # 3  
E-24-643*

Dear Rich:

Enclosed please find three copies of our quarterly report for the period January 22, 1982 - April 21, 1982.

Sincerely,

William B. Rouse  
Professor and Director

WBR:j

CC: Dr. R. T. Chien

Encl.

HUMAN PROBLEM SOLVING PERFORMANCE IN FAULT DIAGNOSIS TASKS

William B. Rouse

Quarterly Report

For the Period January 22, 1982 - April 21, 1982

For

Contract MDA 903-79-C-0421

(July 22, 1979 - July 21, 1982)

Center for Man-Machine Systems Research

Georgia Institute of Technology

Atlanta, Georgia 30332

(404-894-3996)

This reporting period was devoted to completing three manuscripts on the work supported by this contract. One manuscript is on our fuzzy rule-based model of fault diagnosis behavior. Another manuscript is on our study of computer aiding in FAULT. A third manuscript is a review of human problem solving behavior in general and a proposal for an over-all model.

Also during this reporting period efforts were begun to prepare the final report on this research which will cover from 1976 to 1982.

As of April 21, 1982 approximately \$209,000 has been spent.

The final report for E-24-643:

Human Problem Solving Performance in Fault Diagnosis Tasks, by William Rouse, was catalogued as a part of the report series published by the Center for Man-Machine Systems Research. The call number is TA167/.R682x/1982.