

MECHATRONICS BOOK SERIES

CONTROL AND INTELLIGENT SYSTEMS

Momoh Jimoh E. Salami
Abiodun Musa Aibinu
Yasir Mohd Mustafah



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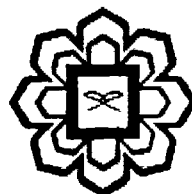
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EDITOR

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Table of Content

PREFACE	v
EDITOR	vi
SECTION 1: INTELLIGENT CONTROL SYSTEM	5
Chapter 1	6
Working Principle and Operating Mode of Atomic Force Microscopy Iskandar Al-Thani Mahmood	
Chapter 2	13
Design and Development of controller of Active Power Filter for Industrial Usage part 1 M.M.Rashid ¹ , N.A.Ramin ² and Zahurul ²	
Chapter 3	21
Design and Development of controller of Active Power Filter for Industrial Usage part 2 M.M.Rashid ¹ , N.A.Ramin ² and Zahurul ²	
Chapter 4	30
Design and Implementation of Instant Noodles Vending Machine M.M.Rashid	
Chapter 5	39
Development of Intelligent Belt Conveyor System (Part 1) M. M. Rashid, Faruok Alliays	
Chapter 6	45
Development of Intelligent Belt Conveyor System M.M.Rashid, Faruk, M J E Salami	
Chapter 7	50
Anti Skid Control System, A Tutorial M. J. E. Salami, A. M. Aibinu, A. F. Salami and Mohd Sofian Bin Basrah	
Chapter 8	54
Design and Prototyping of Inertia Wheel W. Astuti, A. R. Kasim, M. I. Solihin, A.M. Aibinu, Momoh Jimoh E.Salami and Wahyudi	
Chapter 9	62
Control of Automatic Drilling Machine by PLC Md Mozasser Rahman, Najiah Md Zain @Abdul Rahman and Mohd Syazwan Bin Jamil	
Chapter 10	74
Automatic Storage and Retrieval System Abdul Kadir Abdul Jabar Abdul Kadir, M. J. E. Salami and A. M. Aibinu	
Chapter 11	80
Control of Unmanned Underwater Vehicle Raisuddin Khan ^{1,a} , Faried Hasbullah ^{2,b} and Masum Billah ^{3,c}	
Chapter 12	85

Adaptive Sliding Mode Control for 3dof Helicopter Mostafa A. Hamood ^a , Rini Akmeliawati ^b	
Chapter 13	93
Backstepping Control of an Autonomous Quadrotor Norafizah Abas ¹ , Rini Akmeliawati ²	
Chapter 14	103
Piezoelectric Tube Scanner in Atomic Force Microscope Iskandar Al-Thani Mahmood	
SECTION II : INTELLIGENT CONTROL SYSTEM DESIGN	111
Chapter 15	112
A Review on Control of Two-Wheeled Wheelchair System Salmiah Ahmad ^{1, a} , M. O. Tokhi ^{2, b}	
Chapter 16	121
A Smart Car Surveillance System using Programmable Logic Controller (PLC) Siti Fauziah Tohaa and Mohammad Zafran Haja Mohideen	
Chapter 17	128
Design of Controller for Elevator Group Using Fuzzy Logic Part 1 M.M.Rashid, Azhar	
Chapter 18	133
Design of Controller for Elevator Group Using Fuzzy Logic Controller Part 2 M.M.Rashid, Azhar	
Chapter 19	139
Fuzzy Logic-based Intelligent Control of Flexible Link Manipulator Ismaila B. Tijani and Rini Akmeliawati	
Chapter 20	148
EEG based robot control A. Khorshidtalab and M. J. E. Salami	
Chapter 21	158
Visual-Based Intelligent Solar Tracking System Rini Akmeliawati*, Samir A. Abdul Kareem, Riza Muhida	
SECTION III: INTELLIGENT SYSTEM DESIGN	172
Chapter 22	173
Intelligent Air-conditioning System Amir A. Shafie, Raisuddin Khan, H. Al-haieaid M. Ebrahim	
Chapter 23	179
An Intelligent Car Surveillance System: Design and Tools Selection Siti Fauziah Toha ³ and Mohammad Zafran Haja Mohideen	
Chapter 24	185
Automatic Pipe Bursting Monitoring System M. J. E Salami, Syed Ahmed @ Hla Moe Win	

Chapter 37	292
Kernel PCA – An Introduction	
Hamza Baali ^{1,a} , Momoh-Jimoh Eyiomika Salami ^{2,b} , Rini Akmeliawati ^{3,c}	
Chapter 38	297
System Modelling of a Twin rotor System: Time and Frequency Domain Analysis	
Siti Fauziah Toha ^{1,a} and M. O. Tokhi ^{2,b}	
Chapter 39	304
System Identification Technique for a Helicopter Using Genetic Algorithms	
Siti Fauziah Toha ^{1,a} and M. O. Tokhi ^{2,b}	
Chapter 40	311
Advanced Noise Removal Techniques for the Detection of EMG Signal	
Md. Rezwanul Ahsan ^{1,a} , Muhammad Ibn Ibrahimy ^{2,b} and Othman Omran Khalifa ^{3,c}	
Chapter 41	322
Active suspension system: Part 1 - Mathematical Modelling	
Aiman O. Bajaber ^a , Asan G. A. Muthalif ^b , Ayman S.I. Elzubair ^c	
Chapter 42	327
Active Suspension System: Part 2 - Controller Design and Simulation	
Ayman S.I. Elzubair ^a , Asan G. A. Muthalif ^b , Aiman O. Bajaber ^c	
Chapter 43	332
Book Shelving Robotics	
M. J. E. Salami ^{1,a} , Mohd Farid Md Alias ^{2,b} , Nurul Izzah Sidek ^{3,c} , Mohamed Mousa ^{4,d}	
Chapter 44	337
Model Structure and Random Input for System Identification Technique for Flexible Manipulating System	
Siti Fauziah Toha ^{1,a} and M. O. Tokhi ^{2,b}	
Chapter 45	344
Fault Tree Analysis, A case study of a simple Line Following Robot	
Abiodun Musa Aibinu, Haaris Ahmad Quadri, Mu Ham Mach A Mine, Almeahmadi Tarig Saeed S . And Hamide Rohimah	
Chapter 46	351
Review of Malaysian Traffic Summon and Payment system	
A. M. Aibinu, Sharifah Nadiah bt Syed Mohammad, Wan Nur Faezah bin Wan Azmi	

Chapter 18

Design of Controller for Elevator Group Using Fuzzy Logic Controller

Part 2

M.M.Rashid, Azhar

Department of Mechatronics, Faculty of Engineering, International Islamic University Malaysia, Malaysia
mahbub@iium.edu.my

18.1 Introduction

The application of fuzzy logic controllers (FLCs) in elevator control systems can be flourished especially during the 1990s [5]. Fuzzy concepts generally derived from fuzzy phenomena that commonly occur in the natural world. The concepts formed in human brains for perceiving, recognizing, and categorizing natural phenomena are often fuzzy concepts. The classifying (dividing), judging, and reasoning they produce are also fuzzy concepts [20].

18.2 Fuzzy Sets and Fuzzy Operators

Fuzzy concepts are derived from fuzzy phenomena that commonly occur in the natural world. A concept without a crisp extension is a fuzzy concept. In order to enable mathematics to describe fuzzy phenomena, it is of prime importance to reform Cantor's set concept, namely, to define a new kind of set called a fuzzy set. A fuzzy set A on the given universe U is that, for any $u \in U$, there is a corresponding real number

$$\mu_A(u) \in [0, 1] \text{ to } u,$$

where μ_A is called the grade of membership of u belonging to A .

Basic fuzzy set operations on A are inclusion, equality, union, intersection and complement [20].

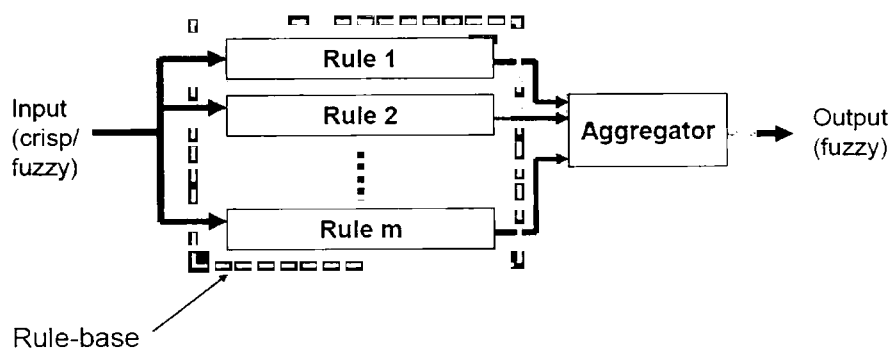


Figure 18.1: General structure of Fuzzy Set