

## A First Course In Fuzzy Logic 2nd Edition

*Type-2 fuzzy sets extend both ordinary and interval-valued fuzzy sets to allow distributions, rather than single values, as degrees of membership. Computations with these truth values are governed by the truth value algebra of type-2 fuzzy sets. The Truth Value Algebra of Type-2 Fuzzy Sets: Order Convolutions of Functions on the Unit Interval explores the fundamental properties of this algebra and the role of these properties in applications. Accessible to anyone with a standard undergraduate mathematics background, this self-contained book offers several options for a one- or two-semester course. It covers topics increasingly used in fuzzy set theory, such as lattice theory, analysis, category theory, and universal algebra. The book discusses the basics of the type-2 truth value algebra, its subalgebra of convex normal functions, and their applications. It also examines the truth value algebra from a more algebraic and axiomatic view. This book gives an introduction to basic fuzzy logic and Mamdani and Takagi-Sugeno fuzzy systems. The text shows how these can be used to control complex nonlinear engineering systems, while also suggesting several approaches to modeling of complex engineering systems with unknown models. Finally, fuzzy modeling and control methods are combined in the book, to create adaptive fuzzy controllers, ending with an example of an obstacle-avoidance controller for an autonomous vehicle using modus ponendo tollens logic.*

*Fuzzy control methods are critical for meeting the demands of complex nonlinear systems. They bestow robust, adaptive, and self-correcting character to complex systems that demand high stability and functionality beyond the capabilities of traditional methods. A thorough treatise on the theory of fuzzy logic control is out of place on the design bench. That is why Fuzzy Controller Design: Theory and Applications offers laboratory- and industry-tested algorithms, techniques, and formulations of real-world problems for immediate implementation. With surgical precision, the authors carefully select the fundamental elements of fuzzy logic control theory necessary to formulate effective and efficient designs. The book supplies a springboard of knowledge, punctuated with examples worked out in MATLAB®/SIMULINK®, from which newcomers to the field can dive directly into applications. It systematically covers the design of hybrid, adaptive, and self-learning fuzzy control structures along with strategies for fuzzy controller design suitable for on-line and off-line operation. Examples occupy an entire chapter, with a section devoted to the simulation of an electro-hydraulic servo system. The final chapter explores industrial applications with emphasis on techniques for fuzzy controller implementation and different implementation platforms for various applications. With proven methods based on more than a decade of experience, Fuzzy Controller Design: Theory and Applications is a concise guide to the methodology, design steps, and formulations for effective control solutions.*

*This book provides an essential introduction to the field of dynamical models. Starting from classical theories such as set theory and probability, it allows readers to draw near to the fuzzy case. On one hand, the book equips readers with a fundamental understanding of the theoretical underpinnings of fuzzy sets and fuzzy dynamical systems. On the other, it demonstrates how these theories are used to solve modeling problems in biomathematics, and presents existing derivatives and integrals applied to the context of fuzzy functions. Each of the major topics is accompanied by examples, worked-out exercises, and exercises to be completed. Moreover, many applications to real problems are presented. The book has been developed on the basis of the authors' lectures to university students and is accordingly primarily intended as a textbook for both upper-level undergraduates and graduates in applied mathematics, statistics, and engineering. It also offers a valuable resource for practitioners such as mathematical consultants and modelers, and for researchers alike, as it may provide both groups with new ideas and inspirations for projects in the fields of fuzzy logic and biomathematics.*

*Fuzzy Logic with Engineering Applications*

*Intelligent Control*

*Fuzzy Control Systems*

*First Course on Fuzzy Theory and Applications*

*Fuzzy Controller Design*

A miner on the planet Zarathustra crosses paths with an adorable fuzzy creature -- and soon realizes that the little guy may possess human-like intelligence. This realization may throw the social and political balance of the planet into question, and several different groups are soon engaged in a heated race to gauge the smarts of the small fuzzy fellows.

There are many uncertainties in the real world. Fuzzy theory treats a kind of uncertainty called fuzziness, where it shows that the boundary of yes or no is ambiguous and appears in the meaning of words or is included in the subjunctives or recognition of human beings. Fuzzy theory is essential and is applicable to many systems -- from consumer products like washing machines or refrigerators to big systems like trains or subways. Recently, fuzzy theory has been a strong tool for combining new theories (called soft computing) such as genetic algorithms or neural networks to get knowledge from real data. This introductory book enables the reader to understand easily what fuzziness is and how one can apply fuzzy theory to real problems -- which explains why it was a best-seller in Japan.

In the early 1970s, fuzzy systems and fuzzy control theories added a new dimension to control systems engineering. From its beginnings as mostly heuristic and somewhat ad hoc, more recent and rigorous approaches to fuzzy control theory have helped make it an integral part of modern control theory and produced many exciting results. Yesterday's "art

Fuzzy Control Systems explores one of the most active areas of research involving fuzzy set theory. The contributors address basic issues concerning the analysis, design, and application of fuzzy control systems. Divided into three parts, the book first devotes itself to the general theory of fuzzy control systems. The second part deals with a variety of methodologies and algorithms used in the analysis and design of fuzzy controllers. The various paradigms include fuzzy reasoning models, fuzzy neural networks, fuzzy expert systems, and genetic algorithms. The final part considers current applications of fuzzy control systems. This book should be required reading for researchers, practitioners, and students interested in fuzzy control systems, artificial intelligence, and fuzzy sets and systems.

Applications to Sustainability

Introduction to Fuzzy Sets, Fuzzy Logic, and Fuzzy Control Systems

Fuzzy Sets & their Application to Clustering & Training

Fuzzy Modeling and Fuzzy Control

Fuzzy Planning

From New York Times bestseller and Hugo Award-winner John Scalzi, an extraordinary retelling of the SF classic Little Fuzzy ZaraCorp holds the right to extract unlimited resources from the verdant planet Zarathustra—as long as the planet is certifiably free of native sentients. So when an outback prospector discovers a species of small, appealing bipeds who might well turn out to be intelligent, language-using beings, it's a race to stop the corporation from "eliminating the problem," which is to say, eliminating the Fuzzies—wide-eyed and ridiculously cute small, and furry—who are as much people as we are. Other Tor Books The Android's Dream Agent to the Stars Your Hate Mail Will Be Graded Fuzzy Nation Redshirts 1. Lock In 2. Head On The Interdependency Sequence 1. The Collapsing Empire 2. The Consuming Fire Old Man's War Series 1. Old Man's War 2. The Ghost Brigades 3. The Last Colony 4. Zoe's Tale 5. The Human Division 6. The End of All Things At the Publisher's request, this title is being sold without Digital Rights Management Software (DRM) applied.

This collection compiles the seminal contributions of Michio Sugeno on fuzzy systems and technologies. Fuzzy Modeling & Control: Selected Works of Sugeno serves as a singular resource that provides a clear, comprehensive treatment of fuzzy control systems. The book comprises two parts fuzzy system identification and modeling systems control Each part outlines the fundamentals of fuzzy logic and covers essential material for understanding the mathematical and modeling details in Sugeno's works. Introductory chapters include extended summaries of each paper or group of papers, suggesting where the theories discussed might be useful in application.

Mathematical Modeling using Fuzzy Logic has been a dream project for the author. Fuzzy Logic provides a unique method of approximate reasoning in an imperfect world. This text is a bridge to the principles of fuzzy logic through an application-focused approach to selected topics in engineering and management. The many examples point to the richer solutions obtained through fuzzy logic and to the possibilities of much wider applications. There are relatively very few texts available at present in fuzzy logic applications. The style and content of this text is complementary to those already available. New areas of application, like application of fuzzy logic in modeling of sustainability, are presented in a graded approach in which the underlying concepts are first described. The text is broadly divided into two parts: the first treats processes, materials, and system applications related to fuzzy logic, and the second delves into the modeling of sustainability with the help of fuzzy logic. This book offers comprehensive coverage of the most essential topics, including: Treating processes, materials, system applications related to fuzzy logic Highlighting new areas of application of fuzzy logic Identifying possibilities of much wider applications of fuzzy logic Modeling of sustainability with the help of fuzzy logic The level enables a selection of the text to be made for the substance of undergraduate-, graduate-, and postgraduate-level courses. There is also sufficient volume and quality for the basis of a postgraduate course. A more restricted and judicious selection can provide the material for a professional short course and various university-level courses.

Although the use of fuzzy control methods has grown nearly to the level of classical control, the true understanding of fuzzy control lags seriously behind. Moreover, most engineers are well versed in either traditional control or in fuzzy control--rarely both. Each has applications for which it is better suited, but without a good understanding of both, engineers cannot make a sound determination of which technique to use for a given situation. A First Course in Fuzzy and Neural Control is designed to build the foundation needed to make those decisions. It begins with an introduction to standard control theory, then makes a smooth transition to complex problems that require innovative fuzzy, neural, and fuzzy-neural techniques. For each method, the authors clearly answer the questions: What is this new control method? Why is it needed? How is it implemented? Real-world examples, exercises, and ideas for student projects reinforce the concepts presented. Developed from lecture notes for a highly successful course titled The Fundamentals of Soft Computing, the text is written in the same reader-friendly style as the authors' popular A First Course in Fuzzy Logic text. A First Course in Fuzzy and Neural Control requires only a basic background in mathematics and engineering and does not overwhelm students with unnecessary material but serves to motivate them toward more advanced studies.

Fuzzy Set Theory

Fuzzy Sets and Fuzzy Decision-Making

A Course in Fuzzy Systems and Control

Fuzzy Nation

Fuzzy Logic for Beginners

Fuzzy sets and fuzzy logic are powerful mathematical tools for modeling and controlling uncertain systems in industry, humanity, and nature; they are facilitators for approximate reasoning in decision making in the absence of complete and precise information. Their role is significant when applied to complex phenomena not easily described by traditional mathematics. The unique feature of the book is twofold: 1) It is the first introductory course (with examples and exercises) which brings in a systematic way fuzzy sets and fuzzy logic into the educational university and college system. 2) It is designed to serve as a basic text for introducing engineers and scientists from various fields to the theory of fuzzy sets and fuzzy logic, thus enabling them to initiate projects and make applications.

Fuzzy logic methodology has proven effective in dealing with complex nonlinear systems containing uncertainties that are otherwise difficult to model. Technology based on this methodology is applicable to many real-world problems, especially in the area of consumer products. This book presents the first comprehensive, unified treatment of fuzzy modeling and fuzzy control, providing tools for the control of complex nonlinear systems. Coverage includes model complexity, model precision, and computing time. This is an excellent reference for electrical, computer, chemical, industrial, civil, manufacturing, mechanical and aeronautical engineers, and also useful for graduate courses in electrical engineering, computer engineering, and computer science.

Fuzzy Set Theory: Foundations and Applications serves as a simple introduction to basic elements of fuzzy set theory. The emphasis is on a conceptual rather than a theoretical presentation of the material. Fuzzy Set Theory also contains an overview of the corresponding elements of classical set theory - including basic ideas of classical relations - as well as an overview of classical logic. Because the inclusion of background material in these classical foundations provides a self-contained course of study, students from many different academic backgrounds will have access to this important new theory.

H. Beam Piper's sequel to the science fiction classic Little Fuzzy. The small fuzzy species discovered on the planet Zarathustra has been declared sapient, but now that the Fuzzies are protected by law, the humans who have colonized Zarathustra have to figure out how to live with them...

How to Design Them, How They Work

Fuzzy Statistical Inferences Based on Fuzzy Random Variables

Theory and Applications

Fuzzy Logic Applications

Order Convolutions of Functions on the Unit Interval

*Many of the key notions associated with spatial planning are essentially 'fuzzy' in their nature. For example, while almost everyone accepts 'sustainability' as an important goal of planning, the actions of the actors involved can render the achieved 'sustainability' minimal, or even counterproductive. Putting forward an innovative way of looking at planning problems and policies, this volume suggests actor-consulting is important in addressing the fuzzy nature of planning. A tool to address differences in understanding, actor-consulting is based on an analysis of actor motives, perceptions and contributions. By inviting all actors to express their desired, actual and potential contributions to achieving an agreed outcome to a local policy issue, decision-makers have a means to develop their goals in line with the roles, motivation, perception and behaviour of the various actors involved. Including contributions from Patsy Healy, Johan Woltjer, Don Miller and Karel Martens, the book presents a variety of case studies which demonstrate the use of the actor-consulting model in addressing planning issues. Teaches how to design a fuzzy controller, includes theoretical fundamentals of fuzzy logic as well as practical aspects of fuzzy technology.*

*The concept of fuzzy logic was conceived by Lotfi Zadeh, a professor at the University of California in Berkeley. His first paper on fuzzy sets in 1965 has motivated researchers and scientists to pursue their studies in this field. Fuzzy logic has emerged as an alternative method to conventional theory in dealing with systems where uncertainty exists. Such systems include engineering applications, economics, business, bio-medical applications etc. A Learner s Guide to Fuzzy Logic Systems introduces the reader to uncertainty-related issues and illustrates the concept of fuzzy sets and operations in a systematic manner. Fuzzy reasoning, fuzzy logic design and numerous applications of fuzzy set theory, including neuro-fuzzy systems and fuzzy genetic algorithms are also covered. This book is primarily intended for undergraduate/postgraduate students and researchers to facilitate education in the ever-increasing field of fuzzy logic. It will also be suitable as a textbook for regular course work as well as for self-study. crowd.*

*The increasing number of applications of fuzzy mathematics has generated interest in widely ranging fields, from engineering and medicine to the humanities and management sciences. Fuzzy Sets and Fuzzy Decision-Making provides an introduction to fuzzy set theory and lays the foundation of fuzzy mathematics and its applications to decision-making. New concepts are simplified with the use of figures and diagrams, and methods are discussed in terms of their direct applications in obtaining solutions to real problems, particularly to decision-related problems. The first chapter presents the current state of knowledge of fuzzy set theory, using pan-Venn-diagrams to illustrate mathematical concepts. The second chapter clearly describes the theory of factor spaces, on which fuzzy decision-making is based. The remainder of the book is devoted to the methods, applications, techniques, and examples of this fuzzy decision-making, and includes methods for determining membership functions and for treating multifactorial and variable weights analyses.*

*Fuzzy Sets, Fuzzy Logic, Applications*

*Fuzzy Neural Networks for Real Time Control Applications*

*A First Course in Fuzzy Logic, Third Edition*

*Concepts, Modeling and Algorithms for Fast Learning*

**The emergence of fuzzy logic and its applications has dramatically changed the face of industrial control engineering. Over the last two decades, fuzzy logic has allowed control engineers to meet and overcome the challenges of developing effective controllers for increasingly complex systems with poorly defined dynamics. Today's engineers need a working knowledge of the principles and techniques of fuzzy logic-Intelligent Control provides it. The author first introduces the traditional control techniques and contrasts them with intelligent control. He then presents several methods of representing and processing knowledge and introduces fuzzy logic as one such method. He highlights the advantages of fuzzy logic over other techniques, indicates its limitations, and describes in detail a hierarchical control structure appropriate for use in intelligent control systems. He introduces a variety of applications, most in the areas of robotics and mechatronics but with others including air conditioning and process/production control. One appendix provides discussion of some advanced analytical concepts of fuzzy logic, another describes a commercially available software system for developing fuzzy logic application. Intelligent Control is filled with worked examples, exercises, problems, and references. No prior knowledge of the subject nor advanced mathematics are needed to comprehend much of the book, making it well-suited as a senior undergraduate or first-year graduate text and a convenient reference tool for practicing professionals.**

**Fuzzy theory has become a subject that generates much interest among the courses for graduate students. However, it was not easy to find a suitable textbook to use in the introductory course and to recommend to the students who want to self-study. The main purpose of this book is just to meet that need. The author has given lectures on the fuzzy theory and its applications for ten years and continuously developed lecture notes on the subject. This book is a publication of the modification and summary of the lecture notes. The fundamental idea of the book is to provide basic and concrete concepts of the fuzzy theory and its applications, and thus the author focused on easy illustrations of the basic concepts. There are numerous examples and figures to help readers to understand and also added exercises at the end of each chapter. This book consists of two parts: a theory part and an application part. The first part (theory part) includes chapters from 1 to 8. Chapters 1 and 2 introduce basic concepts of fuzzy sets and operations, and Chapters 3 and 4 deal with the multi-dimensional fuzzy sets. Chapters 5 and 6 are extensions of the fuzzy theory to the number and function, and Chapters 7 and 8 are developments of fuzzy properties on the probability and logic theories.**

**Fuzzy set theory - and its underlying fuzzy logic - represents one of the most significant scientific and cultural paradigms to emerge in the last half-century. Its theoretical and technological promise is vast, and we are only beginning to experience its potential. Clustering is the first and most basic application of fuzzy set theory, but forms the basis of many, more sophisticated, intelligent computational models, particularly in pattern recognition, data mining, adaptive and hierarchical clustering, and classifier design. Fuzzy Sets and their Application to Clustering and Training offers a comprehensive introduction to fuzzy set theory, focusing on the concepts and results needed for training and clustering applications. It provides a unified mathematical framework for fuzzy classification and clustering, a methodology for developing training and classification methods, and a general method for obtaining a variety of fuzzy clustering algorithms. The authors - top experts from around the world - combine their talents to lay a solid foundation for applications of this powerful tool, from the basic concepts and mathematics through the study of various algorithms, to validity functionals and hierarchical clustering. The result is Fuzzy Sets and their Application to Clustering and Training - an outstanding initiation into the world of fuzzy learning classifiers and fuzzy clustering.**

**The first edition of Fuzzy Logic with Engineering Applications (1995) was the first classroom text for undergraduates in the field. Now updated for the second time, this new edition features the latest advances in the field including material on expansion of the MLFE method using genetic algorithms, cognitive mapping, fuzzy agent-based models and total uncertainty. Redundant or obsolete topics have been removed, resulting in a more concise yet inclusive text that will ensure the book retains its broad appeal at the forefront of the literature. Fuzzy Logic with Engineering Applications, 3rd Edition is oriented mainly towards methods and techniques. Every chapter has been revised, featuring new illustrations and examples throughout. Supporting MATLAB code is downloadable at [www.wileyurope.com/go/fuzzylogic](http://www.wileyurope.com/go/fuzzylogic). This will benefit student learning in all basic operations, the generation of membership functions, and the specialized applications in the latter chapters of the book, providing an invaluable tool for students as well as for self-study by practicing engineers.**

**The Role of Actors in a Fuzzy Governance Environment**

**Fuzzy Set Theory — and Its Applications**

**Foundations and Applications**

**New Trends in Fuzzy Set Theory and Related Items**

**Fuzzy Modeling and Control**

*A First Course in Fuzzy Logic, Fourth Edition is an expanded version of the successful third edition. It provides a comprehensive introduction to the theory and applications of fuzzy logic. This popular text offers a firm mathematical basis for the calculus of fuzzy concepts necessary for designing intelligent systems and a solid background for readers to pursue further studies and real-world applications. New in the Fourth Edition: Features new results on fuzzy sets of type-2 Provides more information on copulas for modeling dependence structures Includes quantum probability for uncertainty modeling in social sciences, especially in economics With its comprehensive updates, this new edition presents all the background necessary for students, instructors and professionals to begin using fuzzy logic in its many—applications in computer science, mathematics, statistics, and engineering. About the Authors: Hung T. Nguyen is a Professor Emeritus at the Department of Mathematical Sciences, New Mexico State University. He is also an Adjunct Professor of Economics at Chiang Mai University, Thailand. Carol L. Walker is also a Professor Emeritus at the Department of Mathematical Sciences, New Mexico State University. Elbert A. Walker is a Professor Emeritus, Department of Mathematical Sciences, New Mexico State University.*

*This book is a printed edition of the Special Issue "New Trends in Fuzzy Set Theory and Related Items" that was published in Axioms*

*Introduction; Fuzzy control: the basics; Case studies in design and implementation; nonlinear analysis; Fuzzy identification and estimation; Adaptive fuzzy control; Fuzzy supervisory control; Perspectives on fuzzy control.*

*Introduction to Fuzzy Systems provides students with a self-contained introduction that requires no preliminary knowledge of fuzzy mathematics and fuzzy control systems theory. Simplified and readily accessible, it encourages both classroom and self-directed learners to build a solid foundation in fuzzy systems.*

*After introducing the subject, the authors move directly into presenting real-world applications of fuzzy logic, revealing its practical flavor. This practicality is then followed by basic fuzzy systems theory. The book also offers a tutorial on fuzzy control theory, based mainly on the well-known classical Proportional-Integral-Derivative (PID) controllers theory and design methods. In particular, the text discusses fuzzy PID controllers in detail, including a description of the new notion of generalized verb-based fuzzy-logic control theory. Introduction to Fuzzy Systems is primarily designed to provide training for systems and control majors, both senior undergraduate and first year graduate students, to acquaint them with the fundamental mathematical theory and design methodology required to understand and utilize fuzzy control systems.*

*Fuzzy Control*  
*The Truth Value Algebra of Type-2 Fuzzy Sets*  
*A First Course in Fuzzy Logic*  
*A First Course in Fuzzy and Neural Control*  
*Little Fuzzy*

**AN INDISPENSABLE RESOURCE FOR ALL THOSE WHO DESIGN AND IMPLEMENT TYPE-1 AND TYPE-2 FUZZY NEURAL NETWORKS IN REAL TIME SYSTEMS** Delve into the type-2 fuzzy logic systems and become engrossed in the parameter update algorithms for type-1 and type-2 fuzzy neural networks and their stability analysis with this book! Not only does this book stand apart from others in its focus but also in its application-based presentation style. Prepared in a way that can be easily understood by those who are experienced and inexperienced in this field. Readers can benefit from the computer source codes for both identification and control purposes which are given at the end of the book. A clear and an in-depth examination has been made of all the necessary mathematical foundations, type-1 and type-2 fuzzy neural network structures and their learning algorithms as well as their stability analysis. You will find that each chapter is devoted to a different learning algorithm for the tuning of type-1 and type-2 fuzzy neural networks; some of which are: • Gradient descent • Levenberg-Marquardt • Extended Kalman filter In addition to the aforementioned conventional learning methods above, number of novel sliding mode control theory-based learning algorithms, which are simpler and have closed forms, and their stability analysis have been proposed. Furthermore, hybrid methods consisting of particle swarm optimization and sliding mode control theory-based algorithms have also been introduced. The potential readers of this book are expected to be the undergraduate and graduate students, engineers, mathematicians and computer scientists. Not only can this book be used as a reference source for a scientist who is interested in fuzzy neural networks and their real-time implementations but also as a course book of fuzzy neural networks or artificial intelligence in master or doctorate university studies. We hope that this book will serve its main purpose successfully. Parameter update algorithms for type-1 and type-2 fuzzy neural networks and their stability analysis Contains algorithms that are applicable to real time systems Introduces fast and simple adaptation rules for type-1 and type-2 fuzzy neural networks Number of case studies both in identification and control Provides MATLAB® codes for some algorithms in the book

**A First Course in Fuzzy Logic, Third Edition**CRC Press

This book presents the most commonly used techniques for the most statistical inferences based on fuzzy data. It brings together many of the main ideas used in statistical inferences in one place, based on fuzzy information including fuzzy data. This book covers a much wider range of topics than a typical introductory text on fuzzy statistics. It includes common topics like elementary probability, descriptive statistics, hypothesis tests, one-way ANOVA, control-charts, reliability systems and regression models The reader is assumed to know calculus and a little fuzzy set theory. The conventional knowledge of probability and statistics is required. Key Features: Includes example in Mathematica and MATLAB. Contains theoretical and applied exercises for each section. Presents various popular methods for analyzing fuzzy data. The book is suitable for students and researchers in statistics, social science, engineering, and economics, and it can be used at graduate and P.h.D level. Gholamreza Hesamian is Associate Professor of Statistics at Payame Noor University. His research areas include decision theory, probability theory, fuzzy mathematics, and statistics.

Provides a comprehensive, self-tutorial course in fuzzy logic and its increasing role in control theory. It summarizes the important results of the field in a well-structured framework.

**Solutions Manual to a First Course in Fuzzy Logic**

**Fuzzy Sapiens**

**A Learner S Guide to Fuzzy Logic Systems**

**Fuzzy Control and Identification**

**A First Course in Fuzzy Logic, Fuzzy Dynamical Systems, and Biomathematics**

*A First Course in Fuzzy Logic, Third Edition continues to provide the ideal introduction to the theory and applications of fuzzy logic. This best-selling text provides a firm mathematical basis for the calculus of fuzzy concepts necessary for designing intelligent systems and a solid background for readers to pursue further studies and real-world applications. New in the Third Edition: A section on type-2 fuzzy sets - a topic that has received much attention in the past few years Additional material on copulas and t-norms More discussions on generalized modus ponens and the compositional rule of inference Complete revision to the chapter on possibility theory Significant expansion of the chapter on fuzzy integrals Many new exercises With its comprehensive updates, this new edition presents all the background necessary for students and professionals to begin using fuzzy logic in its many-and rapidly growing- applications in computer science, mathematics, statistics, and engineering.*

*A First Course in Group Theory*  
*Mathematical Modeling using Fuzzy Logic*  
*Selected Works of Sugeno*  
*Fuzzy Controllers Handbook*  
*Introduction to Fuzzy Systems*