Preface

Artificial intelligence (AI) is a branch of computer science that has been known as one of the world's three cutting-edge technologies (space technology, energy technology and artificial intelligence) since the 1970s. It is also considered one of the three cutting-edge technologies of the 21st century (genetic engineering, nanoscience and artificial intelligence). Intelligent control is the key technology of artificial intelligent.

Intelligent control is a control method with intelligent information processing, intelligent information feedback and intelligent control decision, which is the advanced stage of control theory development. It is mainly used to solve the control problems of complex systems which are difficult to solve by traditional methods. The main characteristics of intelligent control research objects are uncertain mathematical models, high nonlinearity and complex task requirements.

At present, intelligent control technologies have been greatly developed at home and abroad, and have entered the stage of engineering and practicality. With the rapid development of artificial intelligence technologies and computer technologies, intelligent control will usher in a new era of its development. Therefore, intelligent control technologies are professional knowledge and technical means that engineering and technical personnel in various industries urgently need to master. In order to meet this requirement, this book selects five main intelligent control technologies, such as intelligent PID control, fuzzy control, neural network control, genetic algorithm control and adaptive control, which are most commonly used in intelligent control from a large number of literatures and books introducing intelligent control, and refining their basic concepts and basic principles, striving to make the contents less and more precise. Many application examples of intelligent control in various systems are analyzed.

This book is a summary of the author’s research achievements, which including more than 20 academic papers published in domestic and foreign journals and academic conferences. The author hopes that the publication of this book can further meet the requirements of the majority of peers, promote academic and technical exchanges better, and provide reference for the further research of intelligent control.

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Due to the author's limited ability, shortcomings and mistakes in the book are inevitable, and readers are welcome to give criticism and correction.

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