

## **Automatic Control Systems Novel Theoretical Contributions**

### **Editors:**

Arkadii O. Chikrii, Glushkov Institute of Cybernetics of NAS of Ukraine, Ukraine, Yuriy Fedkovich Chernivtsi National University, Ukraine.

Yuriy P. Kondratenko, Petro Mohyla Black Sea National University, Institute of Artificial Intelligence Problems of Ministry of Education and Science and National Academy of Sciences of Ukraine, Ukraine

Olena (Elena) M. Kiseleva, Oles Honchar Dnipro National University, Faculty of Applied Mathematics and Information Technologies, Ukraine

Mykola M. (Nikolay N.) Salnikov, Space Research Institute of the National Academy of Sciences of Ukraine and the State Space Agency of Ukraine, Dynamical System Control Dept., Kyiv, Ukraine

This monograph presents recent theoretical advances in the design of automatic control systems operating under uncertainty. Its central contribution lies in developing innovative and efficient methods that address modern control challenges while relying on realistic assumptions about unknown or variable system parameters. Some problems are solved using minimal, practically accessible information represented as sets of possible values; others use fuzzy approximations of probabilistic characteristics, or classical stochastic assumptions when useful statistical data are available. These differing perspectives shape the analytical tools and control strategies proposed throughout the work.

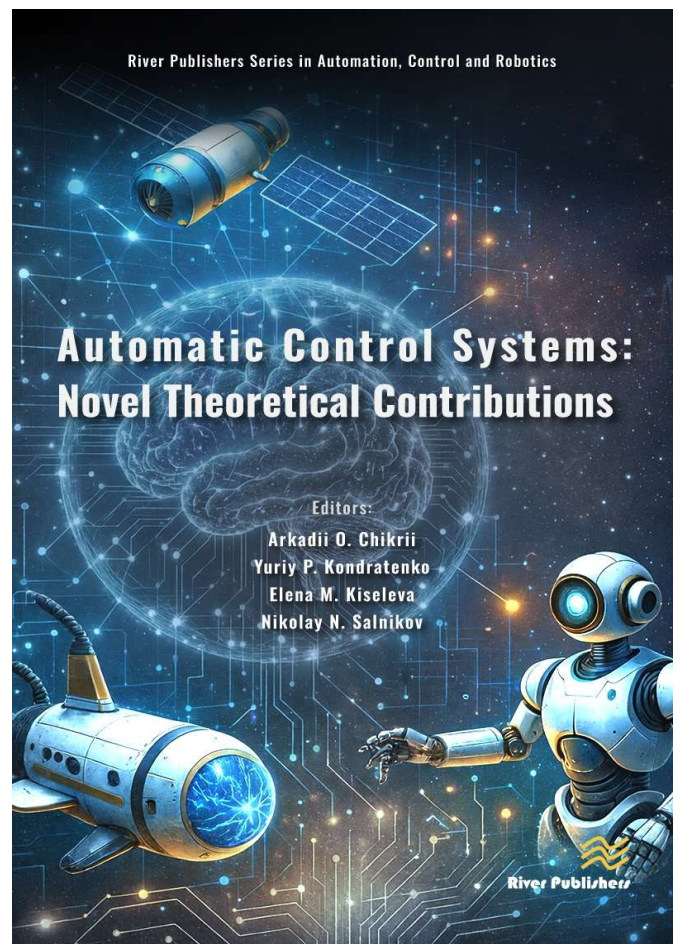
The methods are applied to a broad range of control and estimation tasks. Key technical applications involve the control of mobile systems such as marine vehicles, spacecraft, and robotic platforms. Beyond engineering, the book explores the application of automatic control techniques in biology, medicine, and other fields critical to human life. The monograph also highlights the growing role of information technologies, artificial intelligence, and machine learning in addressing uncertainty across these domains.

The material is structured into two complementary parts: (1) Theory of Conflict and Guaranteed Control and Estimation, and (2) Intelligent, Adaptive, and Optimal Control, offering a unified view of theoretical foundations and intelligent solutions to uncertain control problems.

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## River Publishers Series in Automation, Control and Robotics

ISBN: 9788743812593

e-ISBN: 9788743812609

Available From: November 2026

Price: € 126.51

### KEYWORDS:

Automatic control systems, conflict controlled systems, estimation, guaranteed control, intelligent control, adaptive control, optimal control



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