

Preface

Smart electromechanical systems (SEMS) are used in cyber-physical systems (CPhS). Cyber-physical systems have the ability to integrate computing, communication, and storage of information, monitoring, and control of the physical world objects. The main tasks in the field of theory and practice CPhS are to ensure the efficiency, reliability, and safety of functioning in real time. It is important to bear in mind that the behavior of the system is based on the information received from the central nervous system (CNS) about the environment and the state of the system.

The purpose of the publication was to introduce the latest achievements of scientists of the Russian Academy of Sciences in the theory and practice of SEMS CNS and development of methods for their design and simulation based on the principles of bionics, adaptability, intelligence, and parallelism in information processing and computation.

The topics of primary interest include but are not limited to the following:

- Methods and principles of construction CNS;
- Sensory system (receipt, transfer, and pretreatment measurement information);
- Fuzzification and identification of measurement information;
- Modeling and decision making;
- Formation of control actions and working bodies.

This book is intended for students, scientists, and engineers specializing in the field of smart electromechanical systems and robotics and includes many scientific domains such as receipt, transfer, and pretreatment measurement information, decision-making theory, control theory, and working bodies of robots that imitate the complexity and adaptability of biologic systems.

We are grateful to many people for the support received during the writing of this book. A list of their names cannot be represented here, but to all of them we are deeply grateful.

Saint Petersburg, Russia
November 2016

Andrey E. Gorodetskiy
Vugar G. Kurbanov

Smart Electromechanical Systems: The Central Nervous
System

Gorodetskiy, A.E.; Kurbanov, V.G. (Eds.)

2017, VIII, 270 p. 106 illus., 28 illus. in color., Hardcover

ISBN: 978-3-319-53326-1