

Design, Applications, and Maintenance of Cyber-Physical Systems

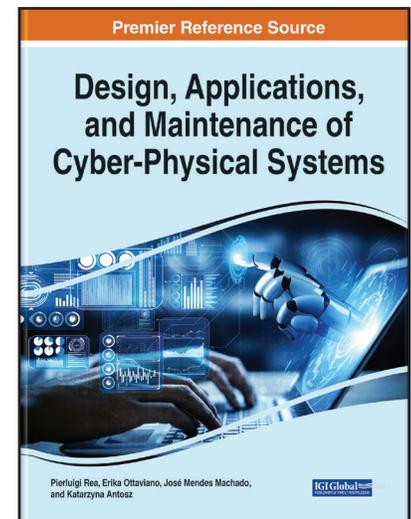
Part of the Advances in Systems Analysis, Software Engineering, and High Performance Computing Book Series

Pierluigi Rea (University of Cassino and Southern Lazio, Italy), Erika Ottaviano (University of Cassino and Southern Lazio, Italy), José Mendes Machado (University of Minho, Portugal) and Katarzyna Antosz (Rzeszow University of Technology, Poland)

Description:

Cyber-physical systems (CPS) can be defined as systems in which physical objects are represented in the digital world and integrated with computation, storage, and communication capabilities and are connected to each other in a network. The goal in the use of the CPS is integrating the dynamics of the physical processes with those of the software and networking, providing abstractions and modelling, design, and analysis techniques for the integrated whole. The notion of CPS is linked to concepts of robotics and sensor networks with intelligent systems proper of computational intelligence leading the pathway. Recent advances in science and engineering improve the link between computational and physical elements by means of intelligent systems, increasing the adaptability, autonomy, efficiency, functionality, reliability, safety, and usability of cyber-physical systems. The potential of cyber-physical systems will spread to several directions, including but not limited to intervention, precision manufacturing, operations in dangerous or inaccessible environments, coordination, efficiency, Maintenance 4.0, and augmentation of human capabilities.

Design, Applications, and Maintenance of Cyber-Physical Systems gives insights about CPS as tools for integrating the dynamics of the physical processes with those of software and networking, providing abstractions and modelling, design, and analysis techniques for their smart manufacturing interoperation. The book will have an impact upon the research on robotics, mechatronics, integrated intelligent multibody systems, Industry 4.0, production systems management and maintenance, decision support systems, and Maintenance 4.0. The chapters discuss not only the technologies involved in CPS but also insights into how they are used in various industries. This book is ideal for engineers, practitioners, researchers, academicians, and students who are interested in a deeper understanding of cyber-physical systems (CPS), their design, application, and maintenance, with a special focus on modern technologies in Industry 4.0 and Maintenance 4.0.



ISBN: 9781799867210

Pages: 330

Copyright: 2021

Release Date: June, 2021

Hardcover: \$225.00

Softcover: \$170.00

E-Book: \$225.00

Hardcover + E-Book: \$270.00

Topics Covered:

Artificial Intelligence
Autonomous Systems
Cyber-Physical Systems

Healthcare-Assistive
Systems
Industrial Systems

Industry 4.0
Internet of Things
Maintenance 4.0

Robotics
Smart Anything

Subject: Computer Science and Information Technology

Classification: Edited Reference

Readership Level: Advanced-Academic Level (Research Recommended)

Research Suitable for: Advanced Undergraduate Students; Graduate Students; Researchers; Academicians; Professionals; Practitioners

Order Information

Phone: 717-533-8845 x100

Toll Free: 1-866-342-6657

Fax: 717-533-8661 or 717-533-7115

Online Bookstore: www.igi-global.com

Mailing Address: 701 East Chocolate Avenue, Hershey, PA 17033, USA