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Cyber-Physical Systems: Decision Making Mechanisms and Applications

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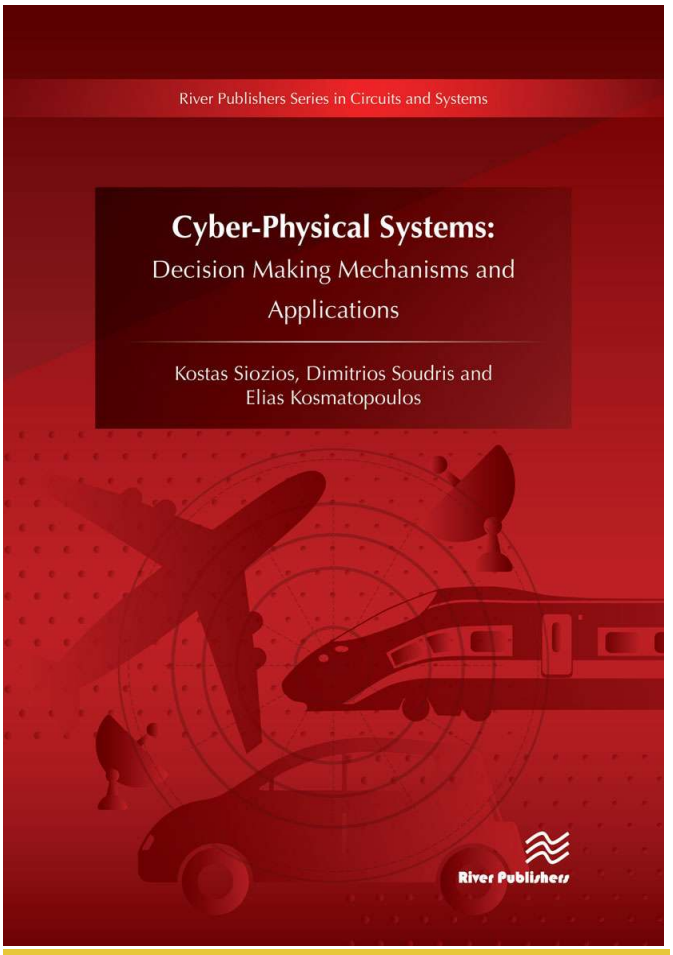
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As systems continue to evolve they rely less on human decision-making and more on computational intelligence. This trend in conjunction with the available technologies for providing advanced sensing, measurement, process control, and communication lead towards the new field of the CyberPhysical System (CPS). CyberPhysical systems are expected to play a major role in the design and development of future engineering platforms with new capabilities that far exceed today's levels of autonomy, functionality and usability. Although these systems exhibit remarkable characteristics, their design and implementation is a challenging issue, as numerous (heterogeneous) components and services have to be appropriately modeled and simulated together. The problem of designing efficient CPS becomes far more challenging in case the target system has to meet also real-time constraints.

CyberPhysical Systems: Decision Making Mechanisms and Applications describes essential theory, recent research and large-scale user cases that addresses urgent challenges in CPS architectures. In particular, it includes chapters on:

- Decision making for large scale CPS
- Modeling of CPS with emphasis at the control mechanisms
- Hardware/software implementation of the control mechanisms
- Fault-tolerant and reliability issues for the control mechanisms
- CyberPhysical user-cases that incorporate challenging decision making



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