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Special Issue on

Emerging trends in Safety-critical Issues for Intelligent Automation Systems

Dear Colleagues,

Intelligent Automation Systems, such as automated storage and retrieval systems, self-driving vehicles, various types of autonomous robots, and unmanned workshop plants, act independently of direct human supervision. Their impact on society and human life will be significant. These automation systems are safety-critical, complex, and powerful with a higher-level functionality. Safety and reliability to perform their tasks safely and minimize failures is one of the key challenges and becomes costly and difficult to achieve. The development of novel safety and reliability technologies dealing with theoretical aspects and for intelligent automation systems has become a hot spot in recent years. With the novel safety and reliability technologies, the intelligent automation systems can detect system failures, identify operation risks, predict unknown safety hazards and vulnerabilities, and avoid situations that pose risks to humans, property, or the automation systems themselves. Recent developments confirm that there are still areas of research to be explored within the safety-critical approaches. The objective of this Special Issue is to compile recent research and development efforts contributing to advances in safety-critical control for autonomous intelligent systems. The topics of interest within the scope of this Special Section include (but are not limited to) the following:

- Intelligent fault detection and fault-tolerant control of intelligent automation systems.
- Reliability and traceability of decision-making for intelligent automation systems.
- Risk assessment of artificial intelligence (AI)-based automation systems.
- Model-based safety and cybersecurity assessment of intelligent automation.
- Ethical framework for designing automation systems.
- Interests and risks of learning-based control.
- Conflict detection and resolution of intelligent automation systems.
- Safety- and security-related issues.
- Functional safety and system security in automation systems
- Human-robot collaboration-Risk assessment of intelligent automation
- Design, development, validation, and applications of intelligent automation systems (e.g., unmanned ground vehicles (UGV), unmanned aerial vehicles (UAV), unmanned underwater vehicles (UUV)).

Important Dates

• Paper submission deadline: 2023-08-01
• Tentative publication date: 2023-12-30

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