IEEE Embedded System Letters

Special Issue on Reliable and Resilient Digital Manufacturing

<u>Call for Papers</u>

IEEE EMBEDDED SYSTEMS LETTERS seeks to provide a forum of quick dissemination of research results in the domain of embedded systems with a target turnaround time of no more than three months. The journal is currently published quarterly consisting of new, short and critically refereed technical papers. This special issue is about digital manufacturing that is enabled by embedded processors, cyber-physical systems (CPS) and IoT devices. The special issue covers several aspects ranging from security and privacy of digital manufacturing systems, to reliability metrics, computer-aided design innovations and reliable CPS with humans-in-the-loop.

A new aspect of embedded and cyber-physical systems is manufacturing applications. As new technologies, such as additive manufacturing, are moving to the digital domain, embedded processors are integrated into critical parts of the process. As a result, the skills of the operators are augmented by embedded computers, and the chance of human error is minimized. Likewise, traditional manufacturing methods, such as computer numerical control (CNC) machines, are transformed into Internet of Things (IoT) nodes, enabling remote operation and control. Nevertheless, this digital transition comes with security and reliability concerns, as well as new threats unique to digital manufacturing domain. From undetectable defects in manufactured parts causing in-service failures, to reverse engineering of embedded firmware and counterfeit production. As digital manufacturing applications rely more and more on programmable processors, the potential for cyberattacks becomes a fundamental concern.

Topics include but are not limited to:

- Security and privacy for cyberphysical systems in digital manufacturing
- Reliability metrics and characterization for digital manufacturing ecosystems
- Failure monitoring and anomaly detection for embedded systems in digital manufacturing
- Machine learning methods for embedded digital manufacturing systems
- Signal processing and robotics for manufacturing systems
- Threat models and safety risks in digital manufacturing
- Encryption and authentication methods for manufacturing systems
- Fault detection and automated recovery in digital manufacturing technologies
- Reliable cyberphysical systems for digital manufacturing with humans-in-the-loop
- Fault injection and side-channel attacks in embedded systems for digital manufacturing

Schedule:

- **Submission deadline**: October 1, 2021
- **Author notification**: November 1, 2021
- **Revised Manuscript submission**: November 22, 2021
- **Final Manuscript submission**: December 20, 2021

Manuscripts should adhere to the technical requirement for IEEE Embedded Systems Letters (IEEE ESL). To guarantee a fast review and publication process; we require a strict page limit of 4 pages for all papers in this journal, without any exception, and the format should be exactly as stated in this guideline. Submitted papers to the special issue must conform to the technical requirements of IEEE ESL, and should be original and unpublished.

Guest Editors: Ramesh Karri (NYU), Nikhil Gupta (NYU), Nektarios Tsoutsos (UD)