Message from Organizers

Cyber-Physical Systems (CPS) and Internet-of-Things (IoT) represent major technology shifts that drive convergence between engineering and information technology. The rapidly growing wave of products require automation of heterogeneous CPS design flows that crosscut several discipline-oriented design verticals grounded in physical and information sciences. The design and operation of CPS and IoT, however, face serious challenges from the fast increase of system scale and complexity, the close interaction with physical environment and human activities, the adoption of multicore and distributed architectural platforms, and the stringent and diverse requirements on performance, safety, security, fault tolerance, extensibility, and energy consumption. In addition, incorporation of Learning Enabled Components (LEC) in CPS and IoT architectures is leading to new challenges in design flows that require re-thinking the fundamentals of assurance and certification. Many key engineering processes in current CPS and IoT design practices are ad-hoc (and often manual), and have been shown to be incapable of coping with such challenges. It is thus critical to have a new set of design automation methodologies, algorithms and tools for improving the quality, scalability, reliability, and productivity of CPS and IoT design processes. Emerging research directions investigate the development of AI-based co-design tools that take advantage of machine learning and artificial intelligence technologies in design flows. The new vision is a symbiotic design automation process that fuses human ingenuity with machine intelligence.

The second DESTION workshop focuses on co-design and co-simulation tools for CPS development, formal methods that address the needs and challenges of incorporating LEC in CPS and IoT, and the application of these approaches in transportation and energy domains. The program of the workshop includes a keynote, presentations of contributed and invited papers, and demonstrations. The COVID-19 pandemic forced us to make the workshop virtual. Consequently, we will miss the stimulating in-person discussions and interactions among researchers. Even with this unique challenge, we hope to continue our path towards becoming a premier forum for researchers and engineers from academia, industry, and government to present and discuss pressing technical challenges, promising solutions, and emerging applications in design automation for CPS and IoT.

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