ETFA 2018
Call for Papers

Emerging Technologies & Factory Automation

23rd IEEE International Conference
September 4-7, 2018, Torino, Italy

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Sponsors:

Sponsored by: *IEEE Industrial Electronics Society (IES)*

Aim: The ETFA conference brings together experts from industry and academia to disseminate novel ideas and emerging trends, research results and practical achievements in the area of industrial and factory automation. The ultimate goal is fostering the development and adoption of scientific methods, models, and tools for the efficient design and operation of industrial and factory automation systems.

Solicited Papers: Research papers. Industry papers. Tutorial and survey papers. Work-in-progress papers.

Technical Tracks

- **Information Technology in Automation**: IT Modeling Techniques for Automation Systems; Model-Driven Development and Model-Based Engineering in Automation and Mechatronic Systems; Data Modeling along the Plant Life Cycle; Domain-Specific Modeling and Programming Languages; Knowledge-Based Systems, Ontologies and Semantic Web in Automation Systems; Machine learning, artificial intelligence and big data technologies; IT Architecture techniques in Automation Systems; Vertical Integration, Integration with MES and ERP Systems; Energy Management in and by Automated Systems; Engineering Methods for Distributed Automation Systems and Cyber-Physical Systems; Software Reuse, Software Product Lines and other Software Engineering Methods in Automation; Agile software development in Automation; Dynamically Reconfigurable, Adaptive, and Emergent Automation Software/Systems; Security and Safety in Factory, Energy, Home, and Building Automation; Case Studies and Application Reports especially from: Digital Factory, Smart Manufacturing, Web-of-Things in the Factory Line, Home and Building Automation, Renewable Energy Systems and Smart Grids.
- **Industrial Communication Technologies and Systems**: Industrial Ethernet networks; Industrial wireless networks; Fieldbus networks; Factory and process automation Networks; Automotive, train, and avionic networks; Home and building automation networks; Power-system automation networks; Smart grids and power-line communications; IP-based and web-based industrial communications; Integration and interoperability of automation networks; Middleware for industrial communications and decentralized control; Software-Defined Networks and cognitive radio networks; Wireless instrumentation and wireless sensor networks; Mesh, relay, and multi-hop industrial networks; Wireless coexistence, spectrum-sharing and radio resource management in industrial environments; Information security and functional safety in industrial communications; Industrial Internet of Things (IIoT); Machine-to-machine (M2M) communications; Communication technologies for Industry 4.0; Remote configuration and network management; Real-time communication and precise synchronization; Event-driven and time-triggered communications; Message schedulability analysis. Quality of Service (QoS) and performance.
- **Real-Time and (Networked) Embedded Systems**: *Theory and Technology in RTNES*: Real-Time Computing, Operating Systems and Communications; Networked Embedded Systems Technology; Wireless Sensor Networks; Cyber Physical Systems. *Design and Methods in RTNES*: Design and Implementation; Design Methodologies and Tools; Components and Platforms; Models of Computation and Formal Methods; Hardware/Software Co- Design. Verification and Validation Methods. *Architectures in RTNES*: Distributed and System-on-Chip Architectures including Communication and NoC Architecture Designs and Protocols; Static and Dynamic Reconfigurable RT Systems; Context-Aware Applications and Self-Adaptive Architectures. *Algorithms and Control in RTNES*: Energy Management; Data Integration and Fusion; Communication Modes; Quality of Service Control. Compensation Mechanisms for Aging and Temperature; Fault-Tolerant Systems. *Case Studies in RTNES*: Industrial Automation, Automotive, Avionics, Communications, e-Health and Building Automation Systems.
- **Automated Manufacturing Systems**: Synthesis and Analysis Techniques; Performance Evaluation and reliability; Scheduling, Resource allocation; Optimization; Discrete Event Systems in Manufacturing Systems; Formal Modeling and Analysis of Manufacturing Systems; Fault Diagnosis, State-Estimation, and Identification; Networked Control of Manufacturing Systems; Planning and Distributed Control of Industrial Systems; Formal Methods and Verification Tools; Security Analysis and Privacy Enforcement; Discrete and Continuous Industrial Automation Systems; Automated Manufacturing Systems and Enterprise Integration; Application of Service-Oriented Technologies; Test Cases, Benchmarks and Tools; Applications and Experiences in Practice; Recent Developments in Standardization, intelligent Cyber-physical Production Systems.
- **Industrial Control**: Process Monitoring and Control; Equipment Monitoring and Control; Supervisory Control; Intelligent Control; Fault Detection and Management; Process Modeling and Optimization; Control Performance Assessment; Industrial Internet of Things; Industrial Control Applications; Large-Scale Systems; Computer Implementation of Control Systems; Co-Design of Control; Computing and Communication; Co-Design of Diagnosis and Dependability; Safety Issues in Industrial Control; Environmental Implications of Control Systems.
- **Computer Vision, Computational Intelligence, and Modern Heuristics in Automation:** Computer vision systems in science, technology and industrial applications; Machine vision technology for flexible factory automation; Advanced visual perception systems, Intelligent Systems and Control, Heuristics and meta-heuristics, Data Mining in Automation and Industrial Applications; Neural/Fuzzy/Evolutionary approaches in automation; predictive, adaptive control, recognition, navigation, motion control, competitive, self-organizing learning and clustering; Computational intelligence for security, reliability, and fault-tolerance; Expert systems in automation; Hardware optimization based on computational intelligence techniques.
- **Intelligent Robots & Systems**: Navigation, Control and Manipulation for Intelligent Robots and Systems; Cognitive Robotics; Cooperative and Collaborative Robotics; Perception, Environment Description and Map Building; Human-Robot Interaction; Integrated Intelligence; Intelligent Robot Assistants; Intelligent Embedded Systems; Multi-Agent Systems and Distributed Robotics Architectures; Path Planning and Collision Avoidance; Sustainable Robotics and Applications; Robot Programming; Mobile Manipulation; Network Robotics; Training and Education in Industrial Robotics; Advanced Sensors and Vision Systems in Robotics; Robot Learning; Simulation and Models for Robotics; Advanced Applications of Autonomous Robots; Supervision, Planning and Failure Recovery.
- **Intelligent Sensors, Sensor Networks, and Information Processing.** *Networked Sensing:* Novel components, devices and architectures; Devices and protocols for the Internet of Things (IoT); Energy harvesting in sensor networks; Network and system architectures; Machine-to-Machine (M2M) communication; Security analysis and protocols; Communication protocols for sensor networks; *Information Processing*: Detection, classification, tracking, reasoning and decision making; Machine learning and AI, sensor data processing, data mining; (Distributed) Signal processing and data analytics; Sensor network modeling, simulation, measurements, and analysis; Network health monitoring, QoS management and dependability; Sensor tasking and actuation, wireless control and automation systems; *Applications*: Sensor network applications, deployment and case studies; Smart systems for production, optimization and green energy; home and building automation, smart factories, smart grid, healthcare.
- **Complex Systems & Systems Engineering:** Systems Engineering, Systems-of-Systems Engineering, Systems Architecture; Complex Systems; Structural and Dynamic Complexity; Cyber-Physical Systems; Cyber Security; Distributed Adaptive and Predictive Intelligent Real Time Feedback Systems; Cloud Computing & Manufacturing; Humans in the Loop; Modeling & Simulation; Model-Based Systems Engineering; Meta-modeling; Model Driven Integration & Interoperability, Systems Integration & Verification; Decision-making for Complex Systems; Scalability and Complexity Management; Modularity and Composability; Autonomous Systems; Fault Diagnosis; Prediction and Tolerance; Large-Scale Systems Integration; Diverse industrial application areas: factory and process automation, automotive applications, avionics, robotics, transportation systems, urban automation and systems, energy systems, health systems, military logistic systems, etc.
- **New frontiers in Automation: Cyber-Physical Systems and Artificial Intelligence**: Distributed Architectures for Adaptive Systems; Autonomous Cyber-Physical Systems; Networked Adaptive Systems; Self-Adaption and Self-Organization for Smart Factories, Smart Cities, Smart Buildings and Smart Energy; Intelligent Interfaces to Smart Distributed Systems, AI-Powered Smart Interfaces; Learning and Self-Optimizing Cyber-Physical Systems; Machine Learning for Production; Deep Learning for Industrial Applications; Algorithms for Diagnosis and Repair; Automatic Adaption; Planning and Scheduling.

Special Sessions: Special Sessions provide the opportunity to focus on particular emerging topics that are not covered in the conference's main technical tracks and/or to stimulate in-depth discussions in special areas relevant to the conference theme. More details on the conference web site.

Best Paper Award: Best paper awards in Factory Automation and Emerging Technologies will be presented at the conference banquet dinner.

Further Information: Conference website: **http://ieee-etfa2018.com/**. ETFA2018 Conference Secretariat: **etfa2018@ieiit.cnr.it**

Submission of Papers: The working language of the conference is English. Two types of submissions are solicited. Long Papers – limited to 8 double column pages in a font no smaller than 10-points. Work-in-Progress– limited to 4 double column pages in a font no smaller than 10-points. Manuscripts must be submitted electronically in PDF format, according to the instructions contained in the Conference web site **http://ieee-etfa2018.com/**

Paper Acceptance: Each accepted paper must be presented at the conference by one of the authors, otherwise the ETFA2018 Organizing Committee reserves the right to exclude a paper from distribution after the conference at IEEE Xplore. The final manuscript must be accompanied by a registration form and a registration fee payment proof. All conference attendees must pay the conference registration fee and their travel, accommodation, and other personal expenses.

Author's Schedule (NEW!!!):

Regular and special sessions papers		***Work-in-progress papers***	
Submission deadline:	April 27, 2018	*Submission deadline:*	June 11, 2018
Acceptance notification:	June 1, 2018	*Acceptance notification:*	June 25, 2018
Deadline for final manuscripts:	July 6, 2018	*Deadline for final manuscripts:*	July 6, 2018

Honorary Chair
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