Open Invited Track on

Advanced robot modeling and control

Invited Track Code: 4561m

Session Chairs:

- Dr. Alexandr Klimchik, Innopolis University, RUSSIA
- Prof. Dr. Anatol Pashkevich, IMT Atlantique, FRANCE
- Dr. Sergey Kolyubin, ITMO, RUSSIA
- Dr. Igor Gaponov, Innopolis University, RUSSIA

Abstract. The primary objective of this track is to bring together specialists in different fields of advanced robot modeling, control and their applications in manufacturing and service. It addresses scientific and engineering problems that arise in automation of various technological processes and robot-based transportation in the industrial environment. Particular topics covered by the track include optimal design, simulation and modeling of robotic manipulators and robotic manufacturing cells, robot calibration and estimation of model parameters, improvement of manipulator accuracy, advanced and intelligent robot control, human-robot collaboration, cooperation and interaction, as well as robot application in assembly, milling and welding. Special emphasis is given to the innovative methodologies and advanced technologies in the area of modern industrial robotics and multi-robot cooperation.

Keywords. Advanced robot modeling, identification and control methods, intelligent robotics, calibration, robot-based transportation

Track topics and their description

Modern robotics gradually advances in the directions of advanced control and automation of both primary and secondary operations required in various manufacturing processes. This calls for advances in existing research areas as well as development of novel multidisciplinary approaches. In recent years, robotics research has been slowly shifting from conventional mechanical modeling and optimization of robot/process parameters to sophisticated perception and adaptive control, as well as multi-robot cooperation in the presence of humans. In order to contribute to the above-mentioned areas, this track covers the following topics, but is not limited by them:

- Industrial robots
- Optimization and optimal control of robotic systems
- Motion planning and optimization
- High precision manufacturing
- Robot calibration
- Model identification
- Force control
- Collision avoidance
- Intelligent and flexible automation
- Collaborative robots
- Human-robot interaction, collaboration and cooperation
- Learning and adaptive systems
- Deep reinforcement learning in robotics
- Augmented, virtual and mixed reality in robotics

Important dates:

October 31, 2019	Submission deadline
February 2020	Notification of acceptance/rejection
March 31, 2020	Deadline for the final submission