

Special Session on

“Modeling, estimation and control in industrial robot”

Organized by

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Call for Papers

Industrial robot have been experiencing rapid development in intelligence to meet the continuously increasing performance requirements on product quality and reliability, economic benefits, and safety. This makes modern industrial robot systems, such as spray painting robot, spot welding robot, assembly robot, palletizing robot, etc., become more and more large and comprehensive. For complex industrial robot systems, various advanced control and optimization methods have been developed to achieve satisfactory system performance. However, the design and implementation of these methods largely depend on the availability of accurate models. Therefore, modeling and estimation play an important role in industrial robot control system.

With the development of industrial robot applications, carrying out highly adaptable and universal model and control method is very significant. But it is difficult to obtain complex robot dynamics/kinematics model due to lot of constants and variables. Parameter estimation provides an alternative for complex industrial robot system modeling and recovers the mathematical model of systems from informative process data. Modern industrial robot systems are typically nonlinear and may have time-delay property which makes the parameter identification and structure identification of these systems very challenging. Therefore, considering the practical issues of simplicity and versatility, modeling, identifying and controlling complex industrial robot systems is a challenging and meaningful task.

This special section provides a platform for researchers and practitioners to present the recent developments of theories/techniques on modeling, estimation and control for complex industrial systems.

Topics of the Session:

Topics of interest include, but are not limited to:

- System modeling for kinematics or dynamics of industrial robot
- Automatic online calibration of system and sensors
- Dynamic motion planning in unknown environments
- State estimation with multi-sensor fusion in industrial robot
- Estimation of system parameters in industrial robot
- Advanced control methods in industrial robot