

IEEE ICM2021

INTERNATIONAL CONFERENCE ON MECHATRONICS

7 - 9 MARCH 2021, KASHIWA, JAPAN

Special Session on

“Nonlinear adaptive robust control of mechatronic systems”

Organized by

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Call for Papers

Abstract: (100 words)

Faced with the increasingly challenging control performance requirements of modern technologies, a mathematically rigorous adaptive robust control (ARC) approach has been developed during the past two decades. The ARC approach bridges the gap between two of the main control research areas – nonlinear robust adaptive control (RAC) and deterministic robust control (DRC). It preserves the theoretical performance results of both two approaches, i.e., guaranteed robust performance results in DRC and excellent steady-state asymptotic tracking results in RAC. The ARC approach has been successfully implemented in many mechatronic systems such as linear motors, robots, and electro-hydraulic systems, and the significant performance improvement of ARC in various implementations makes the approach an ideal choice for industrial applications demanding stringent performance. This special session focuses on recent development of ARC with both theoretical and experimental works.

Topics of interest include, but are not limited to:

- Theoretical development of adaptive robust control under nonlinearities and uncertainties
- Adaptive robust control with input saturation and state constraints
- Adaptive robust control on precision mechatronic systems

Adaptive robust control on electro-hydraulic actuation systems

Adaptive robust based motion and/or force control of robotics, such as industrial robot, tele-robot, mobile manipulator, and quad-rotor aircrafts

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Motion control