Autonomous Robots

~Special Issue Call for Papers~

Foundations of Resilience for Networked Robotic Systems

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Autonomous Robots invites papers for a special issue on **Foundations of Resilience for Networked Robotic Systems**

SCOPE

The falling costs of communication, computation and storage technologies are driving the integration of sensors, actuators, and processors into information technology networks, and we are witnessing a rise of globally accessible robots and robotic services. As we strive to design, control, and coach such large-scale systems, we rely on models and algorithms that help us understand the impact of heterogeneity and scale. On the one hand, as we program and supervise distinct robots individually, we forgo efficiency. On the other hand, as we attempt to manage our robot networks at scale, we forgo guarantees at the individual platform level.

If autonomous systems are to succeed, they must be built to resist environmental disturbances and operational malfunctions. Resilience is the capability to endure unexpected disruptions to the network, to recover swiftly from negative events, and bounce back to 'normality'. New algorithmic and mathematical foundations will help us guarantee resilient, reliable and cooperative operation, and ultimately, long-term autonomy.

This special issue aims at presenting state-of-the art research in designing heterogeneous robotic systems, guaranteeing / analyzing resilience in robot networks, and modeling heterogeneity and resilience in robot-robot or human-robot teams.

We are soliciting contributions in the areas of networked robotic systems, multi-robot systems, distributed robotics, and collaborative human-robot teams. Topics of particular interest include, but are not restricted to:

- Analysis of robustness and resilience in robot networks
- Control and coordination strategies for heterogeneous robot teams
- Resilient perception-action loops
- Management of accidental heterogeneity caused by drift (SW) or wear-and-tear (HW)
- Machine learning strategies under adversarial conditions
- Assurance of autonomy
- Sensor fusion in heterogeneous teams
- Quantification of heterogeneity, diversity measures

IMPORTANT DATES:
- **Submission deadline: April 1, 2018**
- **1st Round of Review: July 1, 2018**
- **Revised submission due: August 1, 2018**
- **Final Notification: September 1, 2018**

PAPER SUBMISSION:
- Authors are encouraged to submit high-quality, original work that has neither appeared in, nor is under consideration by, other journals.
- All papers will be reviewed following standard reviewing procedures for the Journal.
- Papers must be prepared in accordance with the Journal guidelines: **www.springer.com/10514**
- Submit manuscripts to: **http://AURO.edmgr.com**

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