

Abstract**I. Motivations:**

The birth of the international journal in Soft Robotics (SoRo) in 2014 marked a milestone as a dedication to an emerging field of robotic research: soft robotics. Soft Robotics, as implied clearly in its own name, is a field that is characterized by the utilization of soft materials engineering, and promised for broadening the use of robots in daily lives, especially in applications that cannot be implemented easily by conventional rigid robots.

Soft Robotics allows to bring the natures to robotic system by the integration of novel actuators (dielectric elastomers, soft memory polymer, air/fluid actuator, magnetic fluid actuator) and sensors (fabric sensor, liquid metal-based sensor, and so on) with suitable control strategy in bio-inspired designs or human-machine interactions. Soft Robotics has provided a notorious chance for introduction multidisciplinary research in robotics, such as material science, computer science, control theory, biomedical engineering, soft modelling; in applications that require high compliance and safety such as food manipulation, wearable robots, surgical robots, rehabilitation.

We believe that the organized session of system integration in soft robotics would bring an interesting forum for thorough discussion by top researchers in the field, and attract other roboticists' attention on this emerging issue in SII 2016.

II. Goal and Scope

Research on soft robotics has been conducted worldwide, featured by novel designs in surgical robots (King's College London, Harvard Univ.), bio-inspired robots (MIT), haptic interfaces (Stanford Univ.). There are also many research groups working on this emerging issue in Japan. Therefore, we would like to take this chance, as SII 2016 will be organized in Japan, to clarify to attendees the benefit of soft robotics in real-world applications, and to appeal how soft robotics may go further than conventional robots.

To fulfill this goal, we aim to invite original papers from most vibrant researchers in soft robotics field in Japan. Currently, there are **five** researchers

confirmed to submit their papers to this organized session as shown in the Section III. These papers have different perspectives of research, tackling system integrations of actuation, sensing technique, and control in autonomous soft mechanisms. We also welcome submissions related to soft robotics with the following topics (but not limited to):

- Bio-inspired soft mechanisms
- Variable stiffness actuators
- Flexible and soft sensors
- Design of compliant mechanisms
- Autonomous soft robots
- Medical and rehabilitation soft robots
- Wearable soft robots
- Soft object modeling
- Food manipulation
- Control of elastic soft mechanisms
- Soft human-machine and haptic interface
- Modeling of soft-bodied robots
- Soft locomotion

We expect to have at least 8 papers present in this OS from researchers who are active in soft robotics field. All papers will go through normal review process, in which we promise to give high-quality and constructive recommendations from reviewers.

Especially, this organized session has been **fully supported and endorsed by the IEEE RAS (Robotics and Automation Society) Technical Committee on Soft Robotics** (see the attached support letter at the last page). We believe that with this support from RAS technical committee, we would be able to deliver high quality of review process, and attract papers from top researchers in the world to SII 2016.

Organizers

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