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IROS 2017 Workshop on Soft Morphological Design for Haptic Sensation, Interaction and Display (Sept. 24, Full day WS)



Industrial sponsor for the workshop's best poster presentation prizes

[Workshop Program](#) is now available.

Call for contributions:

We invite contribution for one of following categories: 1) extended abstracts of maximum 2 pages in the standard IROS conference format or 2) posters (one slide of PowerPoint) or 3) videos (less than 2 minutes). Submissions will be judged by program committee and the organizers based on relevance to the workshop topics, technical quality, and novelty. Authors of accepted abstract/poster/video are expected to give a teaser talk (2 minutes).

All accepted submissions will be invited to submit full papers to upcoming Special Issue on "[Morphological Design for Haptic Interaction and Perception](#)" on [Advanced Robotics](#)

[翻訳](#)

Please send all inquiries and submission to: teng.sun@kcl.ac.uk

Important Dates

Submission deadline: **Aug. 14, 2017 (UTC-12)**

Notification of acceptance: **Aug. 25, 2017**

Camera ready paper: **Sept. 8, 2017**

Workshop Day: 24 September (Full Day workshop), Sunday, 2017, Vancouver, BC, Canada



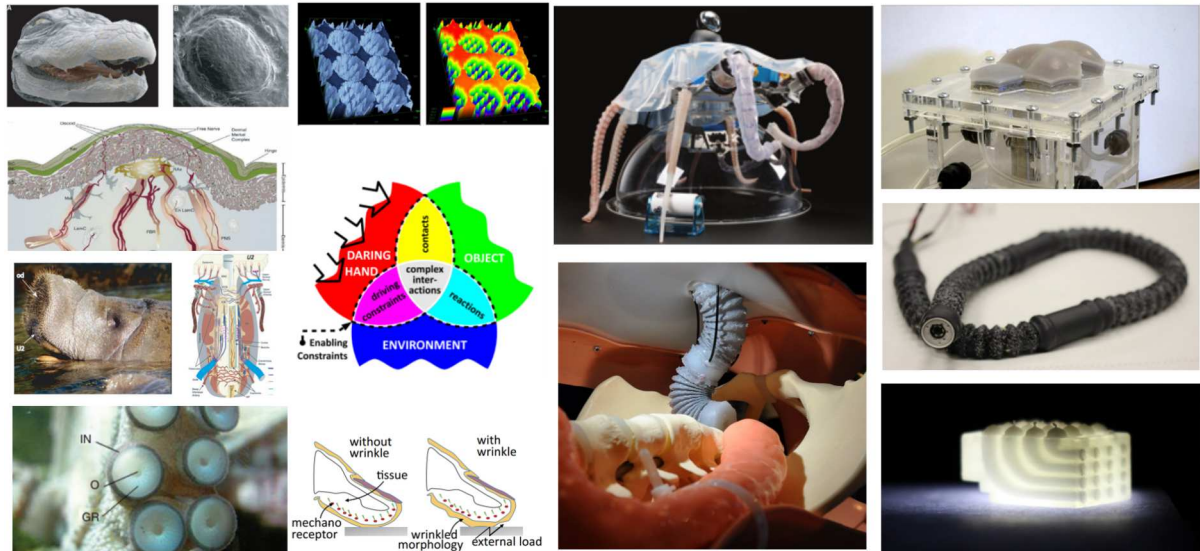
Objective

Haptics, or the sense of touch, helps humans intuitively assess characteristics of their immediate environment, enhancing the stability and dexterity of object/tool manipulation, which is considered crucial in human evolution. Similarly, the sense of touch is essential for a robot to effectively interact with its unstructured physical world. Since haptics, either kinesthetic or tactile, originate from interactions with the environment, the morphology of the robot and the environment affect the sense of touch and effectiveness of the interaction. Morphological computation can be characterized by studies on geometry, mechanics, and dynamics of objects in accomplishment of specific tasks. The unique advantage of soft robots is that they are inherently safe and adaptive for haptic interaction. Together with the emergence of soft robotics, morphological computation has increasingly become a necessary tool for creation of new capabilities in haptic sensing, interaction and display; bringing the benefits of simple yet effective system design compared to conventional approaches.

Keeping the above key attributes in mind, this workshop is devoted to recent trends in haptic sensing, interaction control and haptic display that utilize morphological computation of soft materials. Our aim is to explore synergies between researchers working at the frontiers in soft robotics and haptics in order to gain better insights of the underlying principles of soft morphological computation for improved haptic interactions. In addition, we also aim to explore how these principles can be

incorporated into designing the morphology of soft robots to achieve better performance. Furthermore, we expect the workshop would be a chance for connecting the nature of soft robots to the design of the next-generation of haptic devices.

The workshop is featured by invited talks on state-of-the-art work conducted by established researchers, poster session with flash introductions, and developed product/prototype demonstration.



Topics of interest include, but are not limited to:

- Morphological computation for object interaction and environment exploration
- Soft robot design for haptic interaction (body stiffening, grasping, locomotion, palpation)
- Dynamic interaction modelling and control of soft-bodied robots
- Flexible and soft sensors
- Haptic displays with use of soft materials
- Active tactile sensing systems
- Soft human-machine and haptic interface

List of invited speakers (alphabet order):

Allison Okamura, Stanford University, USA

Hiromi Mochiyama, University of Tsukuba, Japan

Hongbin Liu, King's College London, UK

Huaping Liu, Tsinghua University, China
Jeremie Dequidt, INRIA – Lille – Nord-Europe, France
Kaspar Althoefer, Queen Mary University of London, UK (tentatively confirmed)
Ka-Wai Kwok, The University of Hong Kong, China
Kenji Suzuki, University of Tsukuba, Japan
Matteo Bianchi, University of Pisa, Italy
Nathan Lepora, University of Bristol, UK
Shinichi Hirai, Ritsumeikan University, Japan
Timothy Kowalewski, University of Minnesota, USA
Thrishantha Nanayakkara, Imperial College London, UK
Van Anh Ho, Japan Advanced Institute of Science and Technology (JAIST), Japan

Organizers:

[Hongbin Liu](#), King's College London, UK

[Van Anh Ho](#), Japan Advanced Institute of Science and Technology (JAIST), Japan.

Program Committee

[Ka-Wai Kwok](#), The University of Hong Kong, China

[Christian Duriez](#), INRIA – Lille – Nord-Europe, France

[Shinichi Hirai](#), Ritsumeikan University, Japan

[Nathan Lepora](#), University of Bristol, UK

[Hiromi Mochiyama](#), University of Tsukuba, Japan

Endorsements

This workshop has received endorsements from the IEEE Technical Committee on Haptics, the IEEE Technical Committee on Soft Robotics and the IEEE EMBS (Engineering in Medicine and Biology Society) BioRobotics Technical Committee.





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