

**2020 IEEE/SICE
International Symposium on System Integration
(SII2020)**

Hawaii Convention Center, Honolulu, Hawaii, USA January 12-15, 2020

**Special Session on
“Decoding the Control Principle
Underlying Adaptive Behaviors of Living Organisms”**

organized by

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Abstract of proposed special session:

Living organisms exhibit excellent adaptive behavior under unpredictable real-world constraints. Notably, they achieve such remarkable feats with very limited resources. The pressure of evolutionary selection has honed these abilities, and it is likely that ingenious underlying mechanisms exist. These mechanisms are expected to shed new light not only on biology, but also on the novel design of highly intelligent robots, which cannot be realized solely through conventional approaches. In this special session, state-of-the-art challenges to decode the design principle underlying adaptive behavior of living organisms will be introduced.

Brief description of the area of interest with special focus on why we should believe this is an interesting and significant topic?

The focus of this special session is a challenge to the mystery of adaptive behavior in various levels of biological systems, from organs , individuals to swarms. This area is related to a wide range of science and engineering fields, such as neurobiology, zoology, paleontology, mathematical biology, control, mechanics, robotics, and so on. Not only that potential result of each topic would be beneficial, but also the novel methodologies used there such as zombification (partial interruption of

biological function by medial injection), robotic surgery system, synthetic approach would have great impact on system integration community.

Topics of interest include, but are not limited to:

Bio-inspired robotics, autonomous decentralized control system, mobile robot, active sensing, navigation, soft robotics, neurophysiology, morphology.

Submissions Procedure: All the instructions for paper submission are included in the conference website <https://sice-si.org/conf/SII2020/papersubmission.html>.