Proposal for Special Session at IEEE CASE 2022

Goal:

- Today, there has been tremendous need for robot and automation in industry. Since most of the robots work in a well-structured environment, attention has been omitted to enhance the generalizability of such robot systems. However, with the rise of individualized, customized, and small-batch manufacture, there are increasing requirements for the adaptability of the robot systems in semi-structured/reconfigured-structured environments. Due to the human's nature of handling complex and changing problems, the research of brain-inspired robotics is no doubt a considerable solution to such challenging robot and automation scenarios.

  This special session aims to discuss the recent brain-inspired control and learning methods for robotics and automation, thereby providing a comprehensive overview for future potential directions in both theoretical and engineering aspects. Authors are encouraged to submit research papers that present their state-of-the-art research and applications in all the related area of brain-inspired control and learning methods for robotics and automation.

Session Title: Brain-Inspired Control and Learning for Robotics and Automation

Organizers:

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Contributions:

1. "Contact Position Estimation for a Human Finger Inspired Visual Tactile Sensor" by Bohao Peng, Rui Li and Xiaojie Su

2. "Brain-inspired Locomotion Control of a Snake-like Robot" by Long Cheng, Kai Huang, Xiaoqin Zhang

3. "A Bionic Spatial Cognition Model and Method for Robots Based on the Hippocampus Mechanism" by Jinsheng Yuan, Wei Guo, Fusheng Zha, Mantian Li

4. "Spiking Neural Network Based Control of Complex Manipulation Tasks" by Tinghe Hong, Mingyue Cui, Kai Huang

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5. “Brain-inspired neuromuscular control of musculoskeletal robot with partially observable states” by Jiahao Chen, Hong Qiao