GUANGZHI TANG

CBIM 05 ⋄ 617 Bowser Rd, Piscataway, NJ 08854

gt235@cs.rutgers.edu

RESEARCH INTERESTS

Spiking Neural Networks, Robotics, Reinforcement Learning

EDUCATION

Ph.D Computer Science   Sep 2017 - Present
Rutgers University, New Brunswick, NJ
Advisor: Prof. Konstantinos Michmizos

M.Sc Computer Science   Sep 2015 - May 2017
Rutgers University, New Brunswick, NJ

B.Sc Computer Science   Sep 2011 - May 2015
Nanjing University, Nanjing, China

PUBLICATIONS

· **Tang G**, Kumar N, Michmizos K. (2020). Reinforcement co-Learning of Deep and Spiking Neural Networks for Energy-Efficient Mapless Navigation with Neuromorphic Hardware. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Las Vegas, NV.

· Polykretis I, **Tang G**, Michmizos K. (2020). An Astrocyte-Modulated Neuromorphic Central Pattern Generator for Hexapod Robot Locomotion on Intel's Loihi. *International Conference on Neuromorphic Systems (ICONS)*, Oak Ridge, TN.

· **Tang G**, Michmizos K. (2020). Real-time mapping on a neuromorphic processor. *Neuro Inspired Computational Elements Workshop (NICE)*, Heidelberg, Germany.

· **Tang G**, Shah A, Michmizos K. (2019). Spiking Neural Network on Neuromorphic Hardware for Energy-Efficient Unidimensional SLAM. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Macau, China.

· **Tang G**, Polykretis I, Ivanov V, Shah A, Michmizos K. (2019). Introducing the Astrocytic Processing Unit into Neuromorphic Hardware. *Neuro Inspired Computational Elements Workshop (NICE)*, Albany, NY.

· **Tang G**, Michmizos K. (2018). Gridbot: An autonomous robot controlled by a Spiking Neural Network mimicking the brain's navigational system. *International Conference on Neuromorphic Systems (ICONS)*, Knoxville, TN.

RESEARCH PROJECTS

Deep Reinforcement Learning with Spiking Neural Network

· Combine the energy-efficiency of spiking neural networks with the optimality of deep reinforcement learning to learn optimal policies for robot planning and control. Give general solutions for gradient-based training of spiking neural networks that can be deployed on neuromorphic processor for energy-efficient inference. (IROS 2020)

Neuromorphic Localization and Mapping

· Develop dedicated spiking neural networks solving the simultaneous localization and mapping (SLAM) problem using energy-efficient neuromoprhic processor (NICE 2020, IROS 2019, ICONS 2018).

TEACHING EXPERIENCE

Teaching Assistant Sep 2017 - Sep 2019
Rutgers University

Introduction to Computational Robotics; Computer Architecture; Brain-inspired Computing; Introduction to Computer Science

WORKING EXPERIENCE

Computational Brain Lab, Rutgers University Sep 2019 - Present
Graduate Research Assistant

· Developed spiking neural network algorithms for energy-efficient robot navigation and control with Intel's Loihi neuromorphic processor.

RL Research Group, Nanjing University Sep 2014 - May 2015
Undergraduate Research Assistant

· Developed an online adaptive algorithm based on game theory to play Texas Holdem poker against different types of players.

Mobile Search Ranking Team, Baidu, Inc. Jul 2014 - Sep 2014
Research & Development Intern

· Developed methods to find search query correlations in daily search data using Hadoop clusters.
· Developed personalized search ranking recommendation algorithms for different searching habits.

ACADEMIC SERVICES

Peer Reviews

· ACM Journal on Emerging Technologies in Computing Systems (2020)
· International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2018-20)
· IEEE International Conference on Biomedical Robotics and Biomechatronics (BioRob 2020)
· Neuro Inspired Computational Elements Workshop (NICE 2019)

HONORS & AWARDS

IROS Student Travel Award	IEEE, 2019
Microsoft & IEEE Young Fellow Scholarship Award	MSRA, 2014
Scholarship of the National Talented Program	Chinese Ministry of Education, 2013, 2014