GUANGZHI TANG

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RESEARCH INTERESTS

Neurorobotics, Neuromorphic Computing, Spiking Neural Networks

EDUCATION

Ph.D Computer Science Sep 2017 - Present
Rutgers University, New Brunswick, NJ
Advisor: Prof. Konstantinos Michmizos
Research Affiliation: Computational Brain Lab, CBIM

M.Sc Computer Science Sep 2015 - May 2017
Rutgers University, New Brunswick, NJ
Advisor: Prof. Konstantinos Michmizos
Thesis: Gridbot: Towards a Neuroinspired Navigation System for Robot Planning.

B.Sc Computer Science Sep 2011 - May 2015
Nanjing University, Nanjing, China
Advisor: Prof. Yang Gao
Thesis: Fast Online Learning in Imperfect Information Extensive Games.

PUBLICATIONS

Conferences

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

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

Workshops

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

· **Tang G**, Michmizos K. Gridbot: A Spiking Neural Network Model of the Brain's Navigation System for Autonomous Robots. *Neuro Inspired Computational Elements Workshop (NICE)*, Portland, OR, 2018.

· **Tang G**, Michmizos K. NeuRobotics: A Spiking Neural Network Model of the Brain's Spatial Navigation System for Autonomous Robots. *Conference on Cognitive Computational Neuroscience (CCN)*, New York, NY, 2017.

· **Tang G**, Michmizos K. Gridbot: Spike-Based Head Direction Cells Employing Bayesian Inference. *Neuro Inspired Computational Elements Workshop (NICE)*, San Jose, CA, 2017.

RESEARCH EXPERIENCE

Computational Brain Lab, Rutgers University May 2017 - Present
Research Assistant

· Developing a brain mimicking robotic navigational system on Intel's Loihi neuromorphic processor.

· Developed an astrocyte module on Intel's Loihi neuromorphic processor. This module provides an efficient solution for converting spiking neural networks into spiking neural-astrocyte networks.

· Developed a spiking neural network to drive a mobile robot to move and explore in an open environment. This is the first close-loop spiking neural network for robotics mimicking the brain's spatial system. Developed a spiking neural network for head direction cue integration using Bayesian inference. This network combined visual cues and self-motion cues to correct head direction errors. We implemented both networks in the robot operating system (ROS) to work with robots in real time.

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

· Developed an adaptive algorithm to play Texas Holdem poker against different types of players. The algorithm used online learning and sampling to reinforce conventional game theory approach and outperformed many other online methods in the field of imperfect information extensive games.

WORKING EXPERIENCE

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

· Developed methods to find search query correlations in huge amounts of daily search raw data using Hadoop clusters. Developed personalized search ranking recommendation algorithms for users with different searching habits.

TEACHING EXPERIENCE

Teaching Assistant
Rutgers University

Introduction to Computational Robotics, CS 560	Fall, 2018
Computer Architecture, CS 211	Spring, 2018
Brain-inspired Computing, CS 525	Fall, 2017
Introduction to Computer Science, CS 111	Summer, 2016

HONORS & AWARDS

Intel INRC Grant Award	Intel, 2018
Microsoft & IEEE Young Fellow Scholarship Award	MSRA, 2014
Scholarship of the National Talented Program	Chinese Ministry of Education, 2013, 2014

EXTRA CURRICULAR ACTIVITIES

Member, Rutgers University Cycling Team	2015-Present
Vice President, Nanjing University Cycling Association	2013-2015
Certification for First Aid and CPR	2016-Present