GUANGZHI TANG

EDUCATION

Ph.D Computer Science Sep 2017 - Present
Rutgers University, New Brunswick, NJ

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

RESEARCH EXPERIENCE

Computational Brain Lab, Rutgers University Sep 2017 - Present
Graduate Research Assistant

- Proposed state-of-the-art deep reinforcement learning framework for training spiking neural networks to learn optimal policies for energy-efficient high-dimensional control.
- Developed an online and asynchronous gradient-based learning method for deep spiking neural networks, achieving competitive performance compared to backpropagation.
- Built deep convolutional and recurrent neural networks for spatial-temporal learning of brain EEG signals resulting in an energy-efficient brain-computer interface.
- Introduced brain-inspired SLAM solution for robot navigation on the neuromorphic processor with orders of magnitude of energy reduction.

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

- Developed an online adaptive algorithm based on game theory to play Texas Hold'em poker against different types of players.

WORK EXPERIENCE

Neuromorphic Computing Lab, Intel Labs, Intel. May 2021 - Aug 2021
Neuromorphic Algorithms Intern

- Proposed gradient-based training method for sigma-delta neurons in deep spiking convolutional networks for large-scale drone-based object detection on neuromorphic processors.
- Developed variational autoencoder with disentangled image feature extraction for brain-inspired continuous learning for detection of unknown objects.

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

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

TEACHING EXPERIENCE

Rutgers University Sep 2017 - Sep 2019
Teaching Assistant

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

- Taught weekly recitation classes and advised students on their course assignments and projects.

PUBLICATIONS

- **Tang G**, Kumar N, Polykretis I, Michmizos K. (2021). BioGrad: Biologically Plausible Gradient-Based Learning for Spiking Neural Networks. *arXiv preprint*.

- **Tang G**, Kumar N, Yoo R, Michmizos K. (2020). Deep Reinforcement Learning with Population-Coded Spiking Neural Network for Continuous Control. *Conference on Robot Learning (CoRL)*, Cambridge, MA.

- **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.

SKILLS

Programming Language	Python, C, C++, Java
Machine Learning Framework	PyTorch, TensorFlow
Robotic Software	Robot Operating System (ROS), Gazebo
Robotic Platform	Turtlebot2, Phantomx Hexapod, Intel Realsense
Neuromorphic Computing	Intel Loihi, NxSDK, Lava

ACADEMIC SERVICES

Reviewer

ICLR 2021-22, NeurIPS 2021, EMBC 2018-21, BioRob 2020, NICE 2019, IEEE RA-L, ACM JETC

HONORS & AWARDS

NeurIPS Outstanding Reviewer Award	NeurIPS, 2021
IROS Student Travel Award	IEEE, 2019
Microsoft & IEEE Young Fellow Scholarship Award	MSRA, 2014