

Deepak Ranganatha Sastry Mamillapalli

Edmonton, Alberta, Canada

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Education

University of Alberta

Edmonton, Alberta, Canada

B.SC. IN COMPUTING SCIENCE SPECIALIZATION

Sep. 2019 - Dec. 2023

- Was awarded a University of Alberta Faculty of Science Gold standard scholarship which is given to the top 5% of students in each faculty based on the admission average

Research Experience

Intelligent Robot Learning Lab, University of Alberta

Edmonton, Alberta, Canada

REINFORCEMENT LEARNING FOR FPGA PLACEMENT

Jun. 2023 - Present

- Supervisor: Matthew E. Taylor
- Applying Reinforcement Learning to optimize FPGA placements
- Leveraged Convolutional Neural Network and Graph Convolutional Neural Network techniques for effective feature extraction
- Enhanced agent exploration by integrating Random Network Distillation (RND)
- Refined feature representations and conducted rigorous hyperparameter tuning to optimize the network structure

Intelligent Robot Learning Lab, University of Alberta

Edmonton, Alberta, Canada

UNDERSTANDING AND PREDICTING ENERGY COSTS IN REINFORCEMENT LEARNING

Dec. 2022 - Apr. 2023

- Supervisor: Matthew E. Taylor
- Identified and assessed the impact of features on predictive accuracy of models in predicting energy costs during Reinforcement Learning training and simulation
- Evaluated KNN and Random Forest models for prediction
- Performed extensive hyperparameter tuning to improve accuracy of the models

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Edmonton, Alberta, Canada

SURVEY OF MULTIPLE MODALITIES OF HUMAN-IN-THE-LOOP REINFORCEMENT LEARNING

Dec. 2022 - Apr. 2023

- Supervisor: Matthew E. Taylor
- Conducted a research study on various modes of human-in-the-loop reinforcement learning
- Programmed a Pytorch-based implementation of the Uncertainty-Aware Action Advising approach for Deep Reinforcement Learning agents
- Contributed a scholarly discussions on the project, presenting insights and ideas for future research and development in Reinforcement Learning Algorithms

Professional Experience

University of Alberta Aerial Robotics Group

Edmonton, Alberta, Canada

IMAGING AND AUTOPILOT TEAM MEMBER

Sep. 2022 - Feb. 2023

- Developed an efficient pathfinding algorithm for a fixed-wing drone, ensuring minimal travel distance while effectively avoiding obstacles.
- Enhanced drone safety by aiding in the design of a computer vision model at the ground station to identify favorable landing pads and avoid hazardous ones.

University of Alberta

Edmonton, Alberta, Canada

TEACHING ASSISTANT

Sep. 2021 - Apr. 2022

- Supported Professor Martha White by assisting in the facilitation of both remote and in-person sessions for "CMPUT 267: Introduction to Machine Learning" class.
- Conducted office hours and review sessions, guiding students through their assignments and exam preparation in the same course.
- Managed grading responsibilities and maintained the organization and accessibility of course resources

Publications and Preprints

- Shang Wang, **Deepak Ranganatha Sastry Mamillapalli**, Qianxi Li, Tianpei Yang, Matthew E. Taylor. September 2023. "Reinforcement Learning for FPGA placement." Accepted to the NeurIPS 2023 Workshop: ML For Systems
- **Deepak Ranganatha Sastry Mamillapalli**, Omid Hajihassani, Francois Perron, Matthew E. Taylor. September 2023. "Understanding and Predicting Energy Costs in Reinforcement Learning." Preprint
- Brett Edgar, Dakota Kryzanowski, Henry Lin, **Deepak Ranganatha Sastry Mamillapalli**. December 2022. "Introductory Evaluation of Deep Neural Network and Classification Technique in Identifying the Brain's Representation of Metaphorical Meaning." Preprint.