Liquan Wang

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Education

Georgia Institute of Technology — Atlanta, US
Ph.D. in Computer Science — *Jan. 2024-Present*

University of Toronto — Toronto, Canada
Master of Science in Computer Science — *Sept. 2021-Dec. 2023*

University of Toronto (Major GPA 3.8/4.0) — Toronto, Canada
Bachelor of Arts and Science, Specialist in Computer Science, Major in Math — *Aug. 2017 – May. 2021*

Tsinghua University — Beijing, China
Bachelor of Science in Physics — *Aug. 2015 – Aug. 2017*

- Relevant Courses: stochastic mathematical methods, mathematical physics equations, programing fundamentals C++, data structure and algorithm, computer organization and architecture, modern operating system

Research Interest

Robotics
Computer Vision
Reinforcement Learning

Work Experience

Research Engineering Intern In Robotics Simulation, Nvidia — Jan. 2022 – Jan. 2023
Supervised by Professor Animesh Garg(garg@cs.toronto.edu) — *Toronto, Canada*

- Help develop MPM particle system in PhysX with CUDA
- Connecting MPM particle system from PhysX to OmniVerse
- Build robotic cutting task in IsaacSim with MPM particle system

Teaching Assistant, University of Toronto — Sept. 2021 – Dec. 2021
CSC498 Fall 2021: Introduction to Reinforcement Learning — *Toronto, Canada*

Research Experience

Robot Learning in PAIR lab, University of Toronto — Aug. 2019 – Present
Supervised by Professor Animesh Garg(garg@cs.toronto.edu) — *Toronto, Canada*

- Explored 3D vision which helps robotic manipulation tasks
- Used unsupervised model to train 3d object representation
- Solid experience using IsaacGym to design robotics manipulation task
- Rich experience working on model-based Bayes-adaptive approach to meta-RL
- Real robot working experience

Immersion Experience of Virtual Reality, Tsinghua University — May 2017 – Aug. 2017
Supervised by Professor Lifeng Sun(sunlf@tsinghua.edu.cn) — *Beijing, China*

- Explored motion capture and global Mini-map to generate instruction when people watching VR video
- Contributed experiments on how instructions will help the viewers
- Designed and analyzed experimental survey results

Reinforcement Learning, Tsinghua University — April 2017 – Aug. 2017
Supervised by Professor Zhidong Deng(michael@tsinghua.edu.cn) — *Beijing, China*

- Learned basic knowledge of Reinforcement Learning
- Completed chess AI project using Monte Carlo Tree Search

Publication

L. Wang, A. Goyal, H. Xu, A. Garg Discovering Robotic Interaction Modes with Discrete Representation Learning *Conference on Robot Learning (CoRL) 2024*

L. Wang, N. Dvornik, R. Dubeau, M. Mittal, A. Garg Self-Supervised Learning of Action Affordances as Interaction Modes *International Conference on Robotics and Automation (ICRA) 2023*

D. Turpin, **L. Wang**, E. Heiden, Y. Chen, M. Macklin, S. Tsogkas, S. Dickinson, A. Garg Grasp'D: Differentiable Contact-rich Grasp Synthesis for Multi-fingered Hands *European Conference on Computer Vision (ECCV) 2022*

D. Turpin, **L. Wang**, S. Tsogkas, S. Dickinson, A. Garg. Self-Supervised Discovery of Contact-Aware Tool Affordances. *Robotics: Systems and Science (RSS) 2021*

Ongoing Projects

L. Wang, A. Goyal, R. Dubeau, A. Garg. Unsupervised affordance discovery in vision-language-action model

L. Wang, E. Heiden, A. Garg General Robotic Cutting with MPM objects

Awards

Dean's List Scholar: Faculty of Arts and Science, Fall/Winter 2019-2021 Session

Programmin Skills

Languages: Java, Python, C/C++, CUDA, HTML/CSS, C#
Developer Tools: Git, Docker, VS Code, Visual Studio, PyCharm, IntelliJ
Libraries: pytorch, Tensorflow, mujoco, gym, ros, cv2, NumPy, Matplotlib, IsaacGym, IsaacSim

Personal Interest and Skills

Playing the violin: Have been playing the violin since 8
Playing Chess: Have become a national level athlete in chess when I was only 12