Lingzhi Kong

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Education

Northeastern University **Sep. 2019 – present**
Master of Science in Robotics - Computer Science *Boston, MA*

Northeastern University **Sep. 2015 – Jan. 2018**
Master of Engineering in Control Engineering *Shenyang, China*

Inner Mongolia University of Technology **Sep. 2010 – July 2014**
Bachelor of Engineering in Power Engineering *Huhhot, China*

Relevant Coursework

- Machine Learning
- Reinforcement Learning
- Algorithms
- Optimization Theory
- Matrix Analysis
- System Identification
- Mobile Robotics

Publications

- Linfeng Zhao, **Lingzhi Kong**, Robin Walters, and Lawson L.S. Wong, "Toward Understanding Compositional Generalization in Object-Oriented Environments", *under review*

Experience

Generalizable Robotics and Artificial Intelligence Lab **Sep. 2020 – present**
Research Assistant *Boston, MA*

- Conducted research on compositional generalization in object-oriented environments.
- Conducted research on model-based reinforcement learning in object-oriented environments.

Khoury College of Computer Sciences, Northeastern Univeristy **Sep. 2020 – Dec. 2020**
Teaching Assistant, Course title: CS 5180 Reinforcement Learning and Decision Making *Boston, MA*

- Hold office hours to provide guidance for students on their homework and course projects.

Shenyang Institute of Automation, Chinese Academy of Sciences **May 2016 – May 2017**
Software Intern *Shenyang, China*

- Developed the prototype of a surgical robot for bone surgery.

Projects

Compositional Generalization in Object-Oriented Environments **Jan. 2021 – present**

- Formulated compositional generalization using an algebraic approach.
- Proposed a framework to learn an object-oriented world model that can achieve compositional generalization, based on the formulation.
- Conducted several baseline experiments to compare with our proposed framework.

Teaching an Artificial Agent to Play CarRacing Game | *deep RL, Data Aggregation* **Oct. 2019 – Dec. 2019**

- Taught a computer to play the OpenAI gym CarRacing-v0 game.
- Applied Dataset Aggregation (DAGGER) algorithm to OpenAI gym.
- Demonstrated the efficacy of PPO and DAGGER in sequential decision-making problem.

Image-Guided Surgical Robot for Bone Tumor Resection | *Surgical Robot* **May 2016 – May 2017**

- Developed the prototype of a surgical robot for bone surgery.
- Implemented the algorithms for 3D surgical path generation.
- Implemented the visualization module of the robot position and orientation using Visualization Toolkit.
- Implemented the registration algorithm to build the relationship between world space and image space.
- Conducted the isolated trial of bone resection and repair at hospital.

Technical and Personal Skills

Programming: *Proficient in* Python, Pytorch, Numpy, MATLAB; *some experience in* C++, ROS, MongoDB.
Tools and operating system: *Proficient in* Latex, Git, Linux.
Language: English (*Professional working proficiency*); Chinese (*native*); Mongolian (*daily conversation*).