Lingzhi Kong

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EDUCATION

Northeastern University, Boston, MA **GPA: 3.8 / 4.0** Sept. 2019 - present
Master of Science in Robotics - Computer Science Expected Graduation: Dec. 2021
Related courses: Robotic Science and Systems, Machine Learning, Reinforcement Learning, Algorithms

Northeastern University, Shenyang, China Sept. 2015 - July 2018
Master of Engineering in Control Engineering
Related courses: Optimization Theory, Matrix Analysis, System Identification

Inner Mongolia University of Technology, Huhhot, China Sept. 2010 - July 2014
Bachelor of Engineering in Power Engineering

SKILLS

Coding:	Python, C/C++, Matlab
Libraries:	Numpy, Pytorch, ROS, OpenAI gym, VTK, Eigen
AI:	Machine Learning, Reinforcement Learning, Optimization
Robotics:	Kinematics/Dynamics, Control, Planning

EXPERIENCE

Research Assistant, Generalizable Robotics and Artificial Intelligence Lab May 2020 - present
Northeastern University, Khoury College of Computer Sciences, Boston, MA

- Conducted research on object-based reinforcement learning
- Implemented model-based RL algorithm based on the learned model

Teaching Assistant, CS 5180 Reinforcement Learning and Decision Making Sept. 2020
Northeastern University, Khoury College of Computer Sciences, Boston, MA

- Hold office hour weekly and grade assignments

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

- Participated in a medial robot project; designed and implemented software architecture in python
- Carried out the medical experiment in hospital

Software Engineer July 2014 - May 2015
China Longyuan Power Group Corporation Limited, Shenyang, China

- Carried out semi-physical simulation experiments for wind turbine control system
- Implemented UI for testing the simulation experiments using MFC and C++

PUBLICATIONS

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

SELECTED PROJECTS

Planning and Learning based on Unsupervised Object-Centric World Models Onging

- Extracted object representation from raw image
- Learnt transition model in latent space using GNN and contrastive loss
- Learnt inverse model in latent space
- Implemented model-based RL algorithm based on the learned model

Sequential Decision Making in CarRacing Game Oct. 2019 - Dec. 2019

- Taught a computer to play the OpenAI gym CarRacing-v0 game using PPO
- 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 May 2016 - May 2017

- Implemented the algorithms for 3D surgical path generation, collision check algorithm for 3D path in image space, the visualization module of the robot position and orientation using VTK
- Built the relationship between world space and image space using ICP algorithm
- Conducted the isolated trial (pig hip) of bone resection and repair at hospital

Master-slave control of a continuum surgical robot May 2016 - May 2017

- Established the master-slave mapping relation between master handle and the continuum robot
- Programmed the visualization of the continuum robot and the master handle using VTK
- Designed the control algorithm for the continuum robot through mathematical model and electromagnetic sensor (NDI)