

Mingxi Jia

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EDUCATION

- **Northeastern University** Boston, MA, US
Master of Science in Robotics, Computer Science track; GPA: 3.67 Sep 2021 - May 2023
 - **Selected Coursework:** • Reinforcement Learning and Sequential Decision Making • Robotic Sensing and Navigation • Control System Engineering • Mobile Robotics
- **Beijing University of Chemical Technology** Beijing, China
Bachelor of Engineering in Mechanical Engineering ; Distinguished Graduates Honor; GPA: 3.35 Sep 2016 - July 2020

ACADEMIC EXPERIENCE

- **Sample-efficient learning in robotic manipulation** Northeastern University, Boston, MA
Research Assistant. Supervised by Prof. Robert Platt Oct 2021 - Current
 - **Few-shot Imitation Learning (Link) :**
 - Proposed a novel data augmentation method that can create simulated expert data in 3D space
 - Introduced an **SO(2)**-equivariant imitation learning architecture based on steerable CNNs.
 - Built a PS4-controller-based demonstration collection framework with PID control on a physical UR5 robot.
 - **Equivariant On-robot Learning:**
 - Designed OpenCV-based reward and reset functions for on-robot reinforcement learning.
 - **Simulator and Benchmarking for Robotic Manipulation:**
 - Assisted in designing and developing a simulation environment for benchmarking reinforcement learning algorithms in robotic manipulation.
- **Learning-based Object 3D Reconstruction** BNU-HKBU United International College, China
Research Assistant. Supervised by Prof. (Amy) Hui Zhang Aug 2020 - Aug 2021
 - **Learning-based 3D Reconstruction:**
 - Served as team leader and implemented a pipeline for silhouette-based object 3D reconstruction, including salient object detection, object modeling (MAYA), and Multiphysics Simulation (COMSOL).
 - Developed a data analysis framework for 3D shape reconstruction using Principal Component Analysis (PCA).
- **Real-time High Resolution Plant Stress Prediction** Boston, MA
Collaborator: Dr. Wenzhe Jiao (MIT) Aug 2022 - Current
 - **Parallel Computing:**
 - Built a parallel data processing library based on Message Passing Interface (MPI) for analyzing global soil moisture on supercomputer clusters.
 - **Remote Sensing Image Processing:**
 - Implemented an image projection & cropping tool for National Land Cover Database (NLCD), based on Geopandas.

PUBLICATIONS

- **Mingxi Jia***, Dian Wang*, Guanang Su, David Klee, Xupeng Zhu, Robin Walters, Robert Platt. SEIL: Simulation-augmented Equivariant Imitation Learning. Submitted to ICRA 2023. <https://arxiv.org/pdf/2211.00194>
- Dian Wang, **Mingxi Jia**, Xupeng Zhu, Robin Walters, Robert Platt. On-Robot Learning With Equivariant Models. **CoRL 2022**, Auckland, New Zealand. <https://arxiv.org/pdf/2203.04923.pdf>
- Dian Wang*, Colin Kohler*, Xupeng Zhu, **Mingxi Jia**, Robert Platt. BulletArm: An Open-Source Robotic Manipulation Benchmark and Learning Framework. **ISRR 2022**, Geneva, Switzerland. <https://arxiv.org/pdf/2205.14292.pdf>
- Dian Wang, Robin Walters, **Mingxi Jia**, Robert Platt. Equivariant Reinforcement Learning for Robotic Manipulation. In: ICRA 2022 Workshop & RLDM 2022. https://github.com/pointW/equi_rl

PROFESSIONAL SERVICES

- ICRA 2023 Reviewer

SKILLS SUMMARY

- **Programming:** Python, MATLAB, C++, Assembly Language
- **Hardwares:** UR5, TurtleBot, Raspberry Pi, Siemens S7-1200 PLC
- **Softwares:** Pytorch, ROS, Linux, Solidworks, OpenCV, MAYA

TEACHING

- **Reinforcement Learning and Sequential Decision Making, Northeastern University** Boston, MA
Teaching Assistant - Prof. Chris Amato Sep 2022 - Dec 2022
 - **Lecturing:** Held TA office hours and mentored course projects.
 - **Material Design:** Designed midterm problems on MDP and dynamic programming.
- **Computer Organization(Fall, 2020), BNU-HKBU United International College** Zhuhai, Guangdong, China
Teaching Assistant - Prof. Haipeng Guo Aug 2020 - Dec 2020
 - **Assignment Design:** Designed and reorganized lab instructions about micro-architecture, ISA, compiler, and circuit simulation.

NOTABLE PROJECTS

- **ORB-SLAM3 on iPhone (Link)**
EECE554 Course Project- Prof. Hanumant Singh Feb 2022 - May 2022
 - **iPhone-PC Communication:** Built a real-time video streaming connection between PC and iPhone, using a Wi-Fi router.
 - **ORB-SLAM3 Optimization for Mobile Devices:** Conducted experiments based on the KITTI dataset and self-collected outdoor data, searching for the optimal parameters of FPS and illumination for mobile devices.
- **Hindsight Experience Replay for Robotic Manipulation**
CS5180 Course Project- Prof. Robert Platt Sep 2021 - Dec 2021
 - **Hindsight Experience Replay:** Implemented the Hindsight Experience Replay paper using PyTorch in OpenAI gym's FetchPickAndPlace-v1 environment.
- **Mobile Rescue Robot (Link)**
EECE550 Course Project- Prof. David Rosen Sep 2021 - Dec 2021
 - **Exploration & SLAM :** Built a self-exploration and cartographer-based SLAM turtle bot using ROS.
 - **Rescue Searching:** Designed a queue-based average filter for stabilizing Apriltag localization.

WORK EXPERIENCE & LEADERSHIP

- **BMW Beijing R&D Center** Beijing, China
Intern. Supervised by Dr. Frank Lehnert, Mrs. Dawei Li Oct 2019 - Mar 2020
 - **Internal Coordination:** Headed the arrangement of internal surveys of innovative prototype improvements.
 - **Vehicle Benchmarking:** Assisted in the benchmarking of vehicle design, cost analysis, and user experience development of Human-Machine Interaction.
- **BUCT Debate Team** Beijing, China
President Oct 2018 - Oct 2019
 - **Events Organizer:** Held university-wide debate competitions, creating opportunities to learn public speaking skills for minorities from undeveloped areas in China.
 - **Logic Lecturer:** Gave lectures for freshmen on methods of deductive reasoning and public speaking.

HONORS AND AWARDS

- Khoury Research Apprenticeship, Northeastern University - 2022
- Distinguished Graduates of Beijing - 2020
- Beijing University of Chemical Technology (BUCT) Merit Student - 2019
- BUCT Student Leader Honor - 2018
- BUCT Youngster Robotics Competition Second Prize - 2018
- BUCT Renmin Scholarship Second Prize — 2017, 2018, 2019
- BUCT Renmin Scholarship Special Prize — 2016