

# Donghao Li

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## EDUCATION

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### University of Michigan-Ann Arbor, MI

GPA: 4.00/4.00

*M.S. in Robotics*

April 2024

Core Courses: Mobile Robotics, Deep Learning for Robot Perception, Robotic Systems Laboratory, Math for Robotics, Robot Learning for Planning and Control, Mobile and Pervasive Sensing and Computation, Autonomous Vehicle

### University of Wisconsin-Madison, Wisconsin

GPA: 3.76/4.00

*B.S. in Computer Science & Biological System Engineering - Machinery*

May 2022

## SKILLS

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**Programming:** Python, C++/C, Java, MATLAB

**Tools:** PyTorch, ROS, CFD, Linux, CAD, Ansys, Arduino, Git, LaTeX

**Topics:** Computer Vision, Machine Learning, Deep Learning, Path Planning, 3D Modeling, SLAM, Control

## WORK EXPERIENCE

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### Honda Research Institute America

Ann Arbor, MI

*Multidisciplinary Design Program Student Researcher*

Aug 2023-Present

- Develop overall ROS architecture for scalable harmonious navigation in a multi-robotic-system environment.
- Implement GPS-based waypoint navigation system for UGV and collision avoidance algorithm for UAV.
- Experiment using one DJI drone and two Jackal UGVs in both real-world and simulated environments.

### Dassault Systèmes Delmia R&D

Auburn Hills, MI

*Robotics Algorithm Software Engineering Intern*

May 2023-Aug 2023

- Research of various robot arm path planning algorithms implemented in ROS MoveIt and potential areas of integration with the 3D Experience Robotics solution.
- Development of various solver algorithms that relate to industrial robotics and robot path planning.
- Engagement in discussions that relate to code design, architectural designs and feasibility of development in industry.

## PROJECT EXPERIENCE

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### ArmLab and BotLab

[\[Report\]](#)/[\[Video\]](#) Sept 2022-Dec 2022

*ROB 550: Robotic Systems Laboratory*

*University of Michigan*

- Developed automatic camera calibration, workspace reconstruction, object and color detection in computer vision; forward and inverse kinematics in arm kinematics to grab, sort, arrange, and stack two sizes of colored blocks.
- Implemented navigation control using odometry localization and PID control, mapping and localization using SLAM, obstacle avoidance, A\* path planning for mobile robot to autonomously operate in a complex maze.

### Loc-NeRF++ : An Enhanced Robot Localization using Neural Radiance Fields [\[Report\]](#)/[\[Code\]](#)

Jan 2023-May 2023

*ROB 530: Mobile Robotics*

*University of Michigan*

- Reproduction of Loc-NeRF, a real-time Monte Carlo localization method uses NeRF as a map representation.
- Achieved efficient localization performance with adaptive particle filter by using KLD-Sampling method.
- Evaluated on both indoor (LLFF) and novel largescale outdoor (OMMO) NeRF datasets.

### Ordinary Differential Equation Based Learning Dynamics for Robotic Systems [\[Report\]](#)/[\[Code\]](#)

Jan 2023-May 2023

*ROB 498: Robot Learning for Planning and Control*

*University of Michigan*

- Compared Panda robot arm planar pushing task behavior on discrete numerical differential equation based networks (ResNet, PolyNet and FractalNet) and continuous neural ordinary differential equation based network.
- Evaluated learned models on an open-source forward dynamics dataset collected by using KUKA LWR and Baxter.

## RESEARCH EXPERIENCE

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### Defect Detection in Microscopy Images

May 2021-Sept 2021

*Informatics Skunkworks Lab, Supervised by: Prof. Dane Morgan*

*University of Wisconsin*

- Practiced skills in object detection and tracking on abundant minuscule objects in microscopy images.
- Examined applicability of computer vision technologies like TrackPy, Yolo, DeepSort with material defection videos.