

# Bo Fu

✉ [bofu@umich.edu](mailto:bofu@umich.edu)

🌐 <https://bofu.page>

in [LinkedIn](#)

🐙 [GitLab](#)

## EDUCATION

---

### University of Michigan

*Ph.D. in Robotics*

Ann Arbor, MI

Aug 2019 - Present

- **Research interest:** multi-agent task allocation, robot teaming, scheduling and routing, discrete optimization

### Carnegie Mellon University

*Master of Science in Mechanical Engineering (Research in Robotics)*

Pittsburgh, PA

Aug 2017 - May 2019

### Tongji University

*Bachelor of Engineering in Vehicle Engineering (Automotive Electronics)*

Shanghai, China

Sep 2012 - Jul 2017

## SELECTED PUBLICATIONS

---

- **B. Fu**, et al., "Learning task requirements and agent capabilities for multi-agent task allocation," arXiv preprint arXiv:2211.03286, 2022. [\[PDF\]](#) [\[Video\]](#) [\[Code\]](#)
- **B. Fu**, et al., "Robust task scheduling for heterogeneous robot teams under capability uncertainty," IEEE Transactions on Robotics, pp. 1-19, 2022. [\[PDF\]](#) [\[Video\]](#) [\[Code\]](#)
- **B. Fu**, et al., "Simultaneous human-robot matching and routing for multi-robot tour guiding under time uncertainty," Journal of Autonomous Vehicles and Systems, vol. 1, no. 4, p. 041005, 2021. [\[PDF\]](#) [\[Video\]](#) [\[Code\]](#)
- **B. Fu**, et al., "Heterogeneous vehicle routing and teaming with Gaussian distributed energy uncertainty," in 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). IEEE, 2020, pp. 4315-4322 [\[PDF\]](#)
- **B. Fu**, et al., "Rad-VIO: Rangefinder-aided downward visual-inertial odometry," in 2019 International Conference on Robotics and Automation (ICRA). IEEE, 2019, pp. 1841-1847. [\[PDF\]](#) [\[Video\]](#)

## SELECTED RESEARCH PROJECTS

---

### Resilient Vehicle Teaming in Uncertain Environments

June 2019-Present

Advisor: Prof. Kira Barton, Prof. Maani Ghaffari, University of Michigan

- Establish a learning model to estimate the vehicle capabilities and task requirements for task allocation.
- Develop a planner that optimizes user-defined objectives and generates teams, routes, and task schedules (*largest case tested: 140 agents and 40 tasks, within 120 sec*).
- Develop a partial replanning mechanism to tackle real-time uncertainties and disturbances.

### A Physics-based Simulation Platform for Heterogeneous Multi-agent Tasks

Sep 2021-Present

Advisor: Prof. Kira Barton, Prof. Maani Ghaffari, University of Michigan

- Build a ROS and Gazebo based simulation platform for heterogeneous multi-agent learning and control [\[Video\]](#)
- Develop a scenario generation program to variate the agent and task types/numbers and the environment

### Multicopter Downward Visual-Inertial Tracker

Sep 2017-May 2019

Advisor: Prof. Nathan Michael, Carnegie Mellon University

- Built a state estimator based on a downward camera and laser for high-speed (150 Hz) closed-loop control
- Developed a homography based visual odometry algorithm that improves the accuracy and robustness

## RELATED SKILLS

---

C/C++, Python, Matlab/Simulink, LaTeX, ROS, Gazebo, OpenCV, PyTorch, Gurobi, OR-Tools

Discrete stochastic optimization, graph-based optimization, deep learning, reinforcement learning, computer vision