

Haowen Shi

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Carnegie Mellon University

B.S. Electrical And Computer Engineering, with Additional Major in Robotics, Class of 2019

Cumulative GPA: 3.73/4.00

Master of Science in Robotics (MSR), Class of 2021

Cumulative GPA: 4.11/4.33

COURSE HIGHLIGHTS

16-899 Adaptive Control & Reinforcement Learning

16-748 Underactuated Robotics

16-833 Robot Localization & Mapping

16-711 Kinematics, Dynamics & Control

15-410 OS Design & Implementation

15-418 Parallel Computer Architecture and Programming

15-440 Distributed Systems

15-462 Computer Graphics

16-385 Computer Vision

16-450 Robotics Systems Engineering

18-349 Intro to Embedded Systems

10-601 Intro to Machine Learning

15-214 Principles of Software Construction

18-330 Intro to Computer Security

SKILLS

Embedded Systems:

STM32; NXP i.MX; CMSIS-RTOS; FPGA

Computation Acceleration:

CUDA, OpenMP, MPI

Robotics:

ROS, MoveIt, CoppeliaSim, Unreal Engine

LANGUAGES

Proficient:

C, C++, MATLAB, Python, Java, English, Mandarin Chinese

Comfortable:

Objective C, Swift, Javascript, SystemVerilog, Lua

EXPERIENCE

Apple Inc. Intern

OS Performance (Summer 2018)

I worked on a memory related feature for macOS.

CoreOS Performance Tools & Infrastructure (Summer 2019)

I worked on some improvements of a performance profiling tool.

Biorobotics Laboratory, Carnegie Mellon University.

Research Assistant (May 2017 - Current)

I am working on a line laser scanner under Howie Choset's Biorobotics Lab in joint with Boeing and CMU researchers. I am primarily responsible for structured light 3D reconstruction, calibration, software architecture, system integration and embedded development.

PROJECTS GLIMPSE

For more projects please check my personal website (top right).

Implementation of Planning in Generalized Belief Space

In this project we implemented a belief space planner from scratch in MATLAB based on *indelman2015planning* for active perception. We implemented a non-linear of a cost function in a MPC framework, as well as a state estimator using the GTSAM library. (2020)

Visual Serving for Flexible Robot Manipulators

In this team project we proposed a method to solve the IK problem for robot manipulators with flexible links. We used visual measurements to continuously estimate and update the robot's kinematic parameters and servo the robot to desired poses using the estimated Jacobian. (2020)

"Jolly Roger" - CMU Mechatronic Design Project

*First Place in final competition, won \$5.5K prize money.

I led a team of 5 to create a fully autonomous electro-mechanical device manipulation robot. I am proud of this project for its high complexity and our amazing teamwork. Everyone made critical contributions and we were winners of the final competition. (2019)

"Robo Monkey" - Jogging Companion Robot

In this team project we made a companion robot that could follow a human jogger while carrying items with high speed and precision. My contribution includes software design and integration; adapting a real-time embedded driver to control a high-performance 4WD chassis; a CRC-enabled communication protocol; and sensor signal filters to make the robot operate more smoothly and robustly. (2019)