# Wentao Shi

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## EDUCATION

**The Chinese University of Hong Kong**, Hong Kong — Aug. 2020 –
Doctor of Philosophy in Electronic Engineering — GPA: 3.23/4.0

**University of Pennsylvania**, Philadelphia, PA — Sept. 2020 – May 2022
Master of Science in Engineering (Majored in Robotics) — GPA: 3.73/4.0

**Purdue University**, West Lafayette, IN — Aug. 2018 – May 2020
Bachelor of Science in Mechanical Engineering (2+2) — GPA: 3.84/4.0
Honor: Dean's List & Semester Honors - College of Engineering (twice)

**Shanghai Jiao Tong University**, Shanghai, China — Sept. 2016 – June 2018
Bachelor of Science in Mechanical Engineering (2+2) — GPA: 3.42/4.0
Honor: First-year tuition waiver for Purdue - SJTU '2+2' Dual-Degree Program
Shanghai Jiao Tong University 3rd Scholarship

## RESEARCH EXPERIENCE & PROJECTS

**Magnetically Induced Melting Material Research**

The Chinese University of Hong Kong — Aug. 2023 -

- Study and present the characteristics of Magnetically Induced Melting Material(MIMM)
- Design soft robots using MIMM as a major material, targeted at medical applications
- Demo the MIMMs soft robots applications using ex-vivo lung and phantoms as an environment

**Quadcopter State Estimation, Trajectory Planning and Control (MEAM620)**

University of Pennsylvania — Jan.- May 2022

- Design the waypoints and trajectory for the quadcopter using cubic spline
- Estimate the position of quadcopter using visual inertial odometry (VIO) algorithm, which includes the implementation of RANSAC algorithm and Error State Kalman Filter (ESKF)
- Control the quadcopter using a geometric nonlinear controller

**Wall Following Mobile Base with Cans Auto-Capture Function (MEAM510)**

University of Pennsylvania — Jan.- May 2021

- Design the mobile base parts using Solidworks and create CAD files for manufacturing
- Assemble ESP32, Teensy 2.0, sensors and motors on the base to meet the functionality requirements
- Apply optimized code onto ESP32 and Teensy 2.0 primarily using C language to realize the functions, including wall following and cans auto capture out of sight.
- Top 4 in the final competition of moving cans into a specific region and stealing cans from opponents' side without sight, as a team of 2

**Line Following 'Sheepdog' Robot (ME375)** Purdue University Aug.- Dec. 2019

- Built a robot kit with myRIO, QTR-8RC sensor array, hall-effect sensors, and motors
- Created LabVIEW project, including FPGA Utility Assign VI, PID controller subsystems and Enum case structures based on readings from a STR-8RC sensor array
- Adjusted the parameters in case structures to ensure the robot kit move fast and straight along the white guideline and took the shortest time to finish the task in the lab test session

**Fake News Identification Based on Gated RNNs (CIS520)**

University of Pennsylvania Sept.- Dec. 2020

- Based on dataset (news labeled true or fake), trained a recurrent neural network LSTM model for the fake news detection and used cross validation to calculate accuracy, since the dataset was small (around 20k news).
- Trained the model with different feature inputs, including text title, author and whole text.
- Compared the previous results to other models, including Random Forest and Adaboost, the LSTM model showed its stability with respect different inputs.

**Research: Glass Micromachining Using $CO_2$ Laser** Purdue University Aug.- Dec. 2019

Laser-Assisted Materials Processing Lab

- Designed, tested and analyzed the ablation path on glass substrates, processed by $CO_2$ laser with different combinations of power input and scanning rate
- Generated surface quality number to quantitatively present the surface quality of the microchannel
- Built a power density – scanning rate map to demonstrate crack boundary and the region of desired results with a profile shape similar to a semicircle

**Young Leaders Program: Inventing the future** The University of Sydney Jan. - Feb. 2018

- Conducted research on public transportation and specific product market research, based on Shanghai transportation real-time data during the rush hour
- Maintained productivity in team tasks through the whole program and several rounds of brainstorm were used for idea creation and improvements
- Investigated with great efforts on 3D prototype building for future transportation systems

**Electromechanical Systems in Our Life** Shanghai Jiao Tong University June - July 2017

- Developed MATLAB simulation and basic modelling skills using Simulink
- Performed dynamic analysis on common electromechanical systems in daily life
- Designed possible solutions and built models to different real issues

## PROFESSIONAL EXPERIENCE

**Junior Research Assistant** The Chinese University of Hong Kong Oct. 2022 – June 2023

- Conducting research on minimal soft robots, actuating by the phase change of low boiling temperature liquid Novec
- Programming SLAM algorithm for cystoscopic active probing under the lead of postdoctoral student

**Teaching Assistant for ME 375 lab** Purdue University Jan. 2020 - May 2020

- Assist the lead TA with the introduction of lab section materials
- Help to solve any problems students meet in lab section and debug their VI systems, PID control subsystems on LabVIEW

## PROGRAMMING SKILLS

Proficient: MATLAB, Python

Familiar: Simulink, C, C++, LabVIEW, Linux

Solidworks, AutoCAD, CATIA, Bruker's Version64 Operation and Analysis Software