

# Franklin Zhang

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## Profile

Recent graduate from MIT with a Master's Degree and experience across a broad range of engineering disciplines including mechanical, electrical and software but with a focus on signal processing. I have strong fundamentals in math, physics, and engineering which will allow me to pick up new skills. I have strong communication and team work skills from my experience working on group projects, being a teaching assistant and leading outdoor trips.

## Education

**Massachusetts Institute of Technology** GPA: 4.8/5.0 Aug 2020 – Feb 2022

*Masters of Engineering in Electrical Engineering and Computer Science*

- *Thesis:* Design and Analysis of a Novel Wave Energy Converter with a Tension Leg Platform and Oscillating Proof Masses
- *Relevant Coursework:* Discrete Signal Processing, Computational Photography, Underactuated Robotics, Linear Algebra, Computation Structures, Probability, Seakeeping and Wave-Body Interactions.
- *Teaching:* Teaching assistant for signal processing course

**Massachusetts Institute of Technology** GPA: 4.6/5.0 Aug 2016 – May 2020

*Bachelor of Science in Engineering in Electrical Engineering and Computer Science, Minor in Mechanical Engineering*

- *Coursework in Major:* Signal Processing, Inference, Algorithms, Machine Learning, Power Electronics, Nanoelectronics, Robotics, Embedded Systems
- *Coursework in Minor:* Dynamics and Controls, Design and Manufacturing, Mechanics and Materials

## Skills and Qualifications

- Programming: Python, MATLAB, C++, HTML, CSS, Git, ROS, Linux
- Electrical: LTspice, FEMM
- Mechanical: Solidworks, Lathe, Mill, AutoCAD, WAMIT, 3D printing, laser cutting
- Teaching Assistant for Signal Processing Course (5 semesters)
- Languages: Mandarin (Intermediate/Native), Japanese (4 semesters)
- Clubs: Caving Trip Leader, Lion Dance President

## Work Experience

**Astranis** San Francisco, California June 2021 – August 2021

*Associate Engineer*

- Reduced resource consumption and increased attenuation of digital filters in a polyphase channelizer using a new filter design method in order to improve the performance of digital signal processing chain.
- Integration and testing of a least mean square equalizer in simulation using GNU Radio.
- Writing automated tests that interface with signal sources, signal analyzers and physical hardware for hardware-in-the-loop testing to validate performance of different parts of the signal chain.

**Adaviv** Somerville, Massachusetts June 2020 – August 2020

*Intern*

- Wrote software in order to facilitate process of data collection of plants grown in a greenhouse setting.
- Implementation of 3D reconstruction and localization algorithms for extraction of plant information from image data

**Copious Imaging** Lexington, Massachusetts June 2019 – August 2019

*Intern*

- Built a Python simulation environment and created path planning algorithms for controlling pan tilt zoom cameras.
- Integrated dynamics of physical camera to the simulation using a state space control model.

**Deep Submergence Lab at Woods Hole Oceanographic Institute** Woods Hole, Massachusetts Aug 2018 – Dec 2018

*Research Intern*

- Designed and prototyped an autonomous underwater vehicle for low-cost coastal applications
- Created a low noise fluorometer using a lock-in amplifier to accurately measure chlorophyll fluoresce in the ocean

## Projects

### FM Radio Demodulation Using RTL-SDR

- Extracted clear audio from raw frequency modulated radio data coming from an RTL-SDR, using digital signal processing techniques
- Implemented in discrete time, a frequency discriminator, channel selector, deemphasis filter and sample rate converter using techniques such as the bilinear transform, Parks-McClellan filter design, Kaiser window filter design, and impulse invariance

### Robotics and Machine Vision

- Implementation of panorama stitching, demosaicking, RANSAC algorithms and homography estimation in C++.
- Programmed a model racecar to drive autonomously using techniques such as reinforcement learning, machine vision, object detection, controls, and localization algorithms.