

Mel Ho

Robotics Engineer & Fabricator

San Francisco, CA • <https://github.com/meltingmelon> • mel@mel-ware.com • +1 (415) 314-8934

PROFESSIONAL EXPERIENCE

SELF EMPLOYED

San Francisco, CA

Freelance Designer & Engineer

OCT 2022 - Present

- Designed, built, and controlled an animatronic puppet for an independent film shot in the desert of New Mexico by Illumine Films.
- Designed the electronics for a sponsored prop piece commissioned by Bethesda Softworks in collaboration with Adam Savage's Tested.

REVL, INC

San Francisco, CA

Embedded Software Engineer & Mechanical Engineer

JUN 2021 - Aug 2022

- Assisted in the establishment, maintenance, and optimization of an in-house R&D fabrication lab featuring 3D printers and a CNC router, resulting in streamlined prototyping and production runs.
- Collaborated cross functionally in a small team with hardware, software, networking, leadership, and support to design and build a wireless camera system for gravity coasters from conception to production in a cost constraint startup environment where we needed to ship our product on time.
- Responsible for taking 'demo' Python code and making a production quality v1 of the product that resulted in full test coverage, consistent style, dependency injection patterns, and a successful initial launch.
- Built simulation software to thoroughly test all hardware and software components of the Revl camera system before deployments.
- Developed a suite of internal automation CLI tools that reduced the time of camera hardware QC and assembly by 50%.
- Contributed to existing software documentation and developed new troubleshooting guides for networking, hardware, and software of Revl products.
- Developed a custom embedded Linux OS that automatically configured and installed Revl software which sped up system assembly efficiency by 20%.
- Transitioned our product to the BalenaOS ecosystem which allowed for fast wireless updates of software during the initial launch to troubleshoot and fix issues within minutes of deployment.
- Using Autodesk Fusion 360 and SolidWorks, designed and fabricated hardware prototypes in 3D printed plastics and sheet metal.
- Managed suppliers globally to facilitate parts manufacturing, assembly, and product shipment.
- Tested and improved hardware designs to be more reliable, manufacturable, and cost efficient.
- Built automated manufacturing systems to streamline the assembly and QC process of Revl camera and mounting hardware.
- Designed and sourced housing/internal hardware to be waterproof, dustproof, and handle extreme temperatures in various client sites.

DANSER LAB**Santa Cruz, CA****UNDERGRADUATE ROBOTICS RESEARCHER****DEC 2018 - Jun 2021**

- Maintained and upgraded 3D printers in the lab fabrication space, ensuring uninterrupted progress of ongoing research projects.
- Co-authored a published research paper on a novel soft-rigid robot arm design that tested reinforcement learning algorithms against traditional PID values using sim-to-real methods in python.
- Developed a modular testing environment based on OpenAI's gym which reduced development time for our research and allowed easy expansion of core features such as adding extra motors or new tasks for the arm to complete.
- Created a custom Docker image to streamline development for a small team of researchers to study deep-learning based super resolution in OpenCV.

SAVAGE INDUSTRIES**San Francisco, CA****Shop Assistant****JUN 2016 - Jun 2020**

- Designed, programmed, and fabricated captivating props and set pieces for high-profile TV shows, including Mythbusters Jr. and Savage Builds.
- Expertly operated and maintained a diverse range of tools and equipment, including woodworking tools, machine shop tools, sewing machines, laser cutters, 3D printers, waterjets, and plastic casting materials, to fabricate intricate shop furniture, costume pieces, and props for Adam Savage.

PLETHORA**San Francisco, CA****CNC MACHINIST****APR 2014 - Sep 2014**

- Efficiently translated client CAD files to CAM and produced precise prototypes using state-of-the-art 3-axis and 5-axis Haas milling machines.
- Collaborated with the software team to develop an auto-CAMing program by conducting meticulously calibrated test cuts across a variety of materials and cutting bits
- Machined PPE, Delrin, Aluminum, Brass, and Stainless Steel

TECHSHOP, INC**San Francisco, CA****DREAM CONSULTANT****Nov 2013 -Jul 2015**

- Applied troubleshooting techniques to diagnose and repair a wide range of machinery, including woodworking, plastic fabrication, metalworking, electronics, and laser cutting equipment.
- As an integral member of the team, ensured smooth functioning of the makerspace by promptly repairing infrastructure, and actively participated in space expansions and machine modifications.
- Proactively engaged with makerspace members, offering expert consultation and guidance on utilizing various machines to ensure successful completion of their projects.

EDUCATION

UNIVERSITY OF CALIFORNIA, SANTA CRUZ**Santa Cruz, CA**

Bachelor of Science in Robotics Engineering, Minor in Applied Mathematics

2018-2021

- Awards: Magna Cum Lade (GPA: 3.87), Dean's List (Fall 2019, Spring 2020, Fall 2020)
- Organizations: Tau Beta Pi

ADDITIONAL INFORMATION

- Technical Skills / Software: Embedded C, C++, Python, Docker, BalenaOS, Ansible, Kubernetes, MATLAB, Pytorch, Numpy, OpenCV, Arduino, Ubuntu, Debian, Tensorflow, Git, Unix shell scripting, Autodesk Fusion 360, SolidWorks, Adobe Photoshop, Adobe Illustrator, CAD/CAM, CNC Machining, SLA/FDM 3D printing, Laser Cutting, Metalworking, GD&T, Unix shell scripting
- Journal Papers: Robbins, A.S., Ho, M. & Teodorescu, M. (2022). Model-free dynamic control of robotic joints with integrated elastic ligaments. Robotics and Autonomous Systems. 104150.