

BENJAMIN CHANG

UNIVERSITY OF CALIFORNIA, BERKELEY - 2020

Double Major – Overall GPA: 3.73, Technical GPA: 3.90

- Bachelor of Science in Mechanical Engineering
- Bachelor of Science in Electrical Engineering & Computer Science

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WORK EXPERIENCE

Uber Advanced Technologies Group

San Francisco, CA

Simulation Software Engineering Intern

Jun 2019 – Dec 2019

- Researched and implemented varying fidelity physics-based sensor simulation models for synthetic LiDAR intensity, with noise injection based on extrinsic calibration & statistical analysis
- Experiment design, sample procurement/testing, and data processing for material optical library
- Implemented data extraction/analysis/visualization pipeline for LiDAR data in Python

Hardware Analysis Engineering Intern

Aug 2018 – Dec 2018

- Performed modal and crash analysis for self-driving compute liquid cooling system using ANSYS
- Owned end-to-end structural analysis for next generation battery pack, providing crush/drop/modal/harmonic/crash analysis and communicated suggestions to guide key design changes
- Identified, performed, and documented analysis necessary to meet critical transport requirement

Quartus Engineering Inc.

San Diego, CA

Mechanical Engineering Design Intern

May 2018 – Aug 2018

- Designed and manufactured benchtop medical drill and electronic enclosure, optimizing design for rigidity, vibration isolation, wire harness routing, thermal management, and EMI shielding
- Owned R&D of medical drill bit project, creating highly parametric CAD model, model configurations, and manufacturing drawings for quote – culminated in client design presentation
- Created multiple detailed part/assembly drawings for precision optical mounts

Tiny Toronto

Toronto, ONT

Product Design Intern

Jun 2017 – Aug 2017

- Designed off-grid tiny home prototype – creating energy models, drawings, and product renders

ACTIVITIES

Hybrid Robotics Group – Professor Koushil Sreenath

Berkeley, CA

Undergraduate Researcher

Aug 2019 – Dec 2019

- Modeled Lagrangian dynamics and I/O linearizing controller for novel planar bipedal robot
- Simulated controller performance for various gait designs and validated on benchtop hardware

Cal Supermileage Vehicle Engineering Team

Berkeley, CA

Technical Advisor

Jun 2019 – April 2020

- Oversaw team project management, coordinated design reviews, and provided technical guidance
- Developed and led training seminars on CAD, engineering design, FEA, and manufacturing

Powertrain Lead Engineer

Aug 2017 – May 2019

- Led design, analysis, manufacturing, and testing of battery electric vehicle powertrain systems
- Owned the design, manufacturing, wiring, and testing of custom lithium-ion battery pack
- Performed CFD analysis to characterize aerodynamic performance of carbon fiber chassis
- Modeled vehicle dynamics, torque, and efficiency performance for BLDC motor selection

Berkeley Hyperloop: SpaceX Hyperloop Competition Team

Berkeley, CA

Chassis Engineer

Aug 2015 – March 2016

- Designed and performed structural analysis for hyperloop pod gullwing door mechanism

RELEVANT COURSEWORK

ME: Legged Robotics Control | Vehicle Control | UAV Control | Feedback Control | Mechatronics
Finite Element Analysis | Engineering Materials | Experimentation & Measurements | Advanced
Design Graphics | Heat Transfer | Thermodynamics | Dynamics | Fluid Mechanics | Solid
Mechanics | Manufacturing & Tolerancing | Advanced MATLAB | 3D Modeling for Design

EECS: Machine Learning | Artificial Intelligence | Robotic Manipulation | Efficient Algorithms &
Intractable Problems | Computer Architecture | Data Structures & Algorithms | Discrete Math
& Probability | Signals and Systems | Designing Information Devices and Systems

SKILLS

SOFTWARE

Python, Java, C, C++, ROS, Git
Matlab, Simulink, Labview, Microprocessors
Solidworks, PDM, Creo, Fusion 360
ANSYS Mechanical, Fluent, Explicit Dynamics
LaTeX, MS Office

TECHNICAL

GD&T, Design for Manufacture
Machining - Lathe, Mill, CNC, CAM
Wire harnessing, Soldering, Oscilloscope
General Fabrication, Rapid Prototyping

SOCIETIES

Pi Tau Sigma Mech. Eng. Honor Society
American Society of Mechanical Engineers

PROJECTS

Oly: MechE Capstone Project – Drivetrain design, sensor integration, and electrical distribution for SLAM based, holonomic robotic platform for collaborative load transportation and obstacle avoidance.

Baxter: System ROS architecture, kinematics, state estimation, and controls design for real-time image-based pose tracking and robotic mimicry on the Baxter dual arm robot platform.

ICTeg: System design, sensor integration, data analysis, thermal simulation, and dynamometer testing for novel TEG-based IC engine exhaust energy recapture device.

BARC: System ID and implementation of LQR/PID controllers in ROS for vision-based lane keeping, drift parking, traction control, and adaptive cruise control for autonomous race car project.

Crazyflie: Cascaded PID flight control design in C++ for attitude control and stable hover on micro quadcopter.

MOVI Pro: Detailed product 3D modeling and animation of complex 300+ part gimbal camera stabilizer in Solidworks & 3DS Max.

MapLab: Search algorithm and frontend GUI design for optimal Berkeley campus bicyclist/pedestrian navigation program in Matlab. Data acquisition for mapping via GIS and optimization w/ parallel compute.