John Chen

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EDUCATION

University of California, Santa Barbara   Santa Barbara, CA
Master of Science in Mechanical Engineering   *Sept. 2024 – June 2025*
- GPA: 3.84 / 4.0
- Taught as a TA for the senior mechanical engineering lab classes and advised juniors on quarter-long projects

University of California, Santa Barbara   Santa Barbara, CA
Bachelor of Science in Mechanical Engineering   *Sept. 2020 – June 2024*
- Capstone project: Designed, manufactured, and tested a minimially-invasive (MIS) TLIF discectomy surgery instrument
- GPA: 3.73 / 4.0 Deans Honors (ENGR)

Passed Mechanical Engineering FE Exam April 2025

WORK & RESEARCH EXPERIENCE

Advanced Manufacturing Technology Intern/Co-op   June 2023 – December 2024
Karl Storz Imaging   *Goleta, CA*
- Integrated a reprocessing system to automate and speed up testing of endoscope camera heads to save both time (6+ months of lead time) and money ($50,000+) for R&D per prototype, drastically increasing efficiency
- Performed a design of experiments (DOE) to analyze input effects and to create a model for output prediction
- Utilized best practices when building the electrical system to be both safe and eliminate signal interference, carefully planning around hydraulics (40 PSI) and high voltage lines (120V AC), through grounding and limiting live wires with relays
- Recommended novel cost-saving manufacturing processes based on comparative data taken from a surface profilometer, color meter, and microscope camera to meet company quality standards, saving hundreds of dollars per unit and decreasing manufacturing limitations
- Learned the importance of careful planning, goal setting, and having an engineering eye to ensure safety and reliability

Undergraduate Research Assistant   June 2022 – Present
UCSB - Hawkes Lab   *Santa Barbara, CA*
- Devised and rapidly iterated prototypes for a pneumatic jumper (jumped 25 feet into the air)
- Programmed a MATLAB simulation script to determine optimal design parameters and predict jump height
- Performed a variety of tests (pressure, velocity, tensile) and collected quantitative and qualitative data for future reference
- Modeled in SolidWorks and manufactured the tip mount for a pipe inspection vine robot project sponsored by Bechtel
- Learned the importance of simulations and modeling for optimization and feasibility as well as the importance of a manufacturable design

Undergraduate Research Assistant   June 2021 – June 2023
UCSB - Hansma Research Group   *Santa Barbara, CA*
- Collaborated with graduate student researchers and faculty in the collection and evaluation of chronic pain research data
- Created a peak detection code (C++ / Python) using thousands of points collected by a photoplethysmography (PPG) sensor to determine heart rate variability which, along with a temperature sensor, is then implemented into a hand-held biofeedback device
- Designed and prototyped improved biofeedback devices in Solidworks to be 3D printed for user feedback
- Soldered and repaired 20+ biofeedback devices and 50+ pulse sensor printed circuit boards (PCBs)
- Gained experience working on a multidisciplinary project and with the tricky nature of human subjects and user experience

PROJECTS & PUBLICATIONS

School Projects   October 2020 – June 2020
UCSB & University of Edinburgh   *Santa Barbara, CA*
- Created a toy lightsaber that could extend and retract using a clutched motor spool and compressed air (Arduino/Solidworks/3D printing)
- Worked on a biomimetic hand in Fusion 360 and an assistive finger exoskeleton actuated with nitinol wire (ran FEA for failure analysis)

Publications
UCSB   *Santa Barbara, CA*
- Dynamic Phase Extraction: Applications in Pulse Rate Variability: https://doi.org/10.1007/s10484-022-09549-z

TECHNICAL SKILLS

Engineering: Autodesk Inventor, Solidworks, MATLAB, Arduino, Onshape, Fusion 360, Finite Element Analysis (FEA), Design for Manufacturability (DFM), 3D printing, COMSOL
Programs: Java, C++, Python, R, Data Analysis (Python, Pandas & Numpy), Machine Learning (PyTorch), C
Others: Written and Verbal Communication, Math, English Fluency, Google Drive, Microsoft Office, Time Management, LATEX
Relevant Coursework: Electronics Circuits, Statics, Dynamics, Thermodynamics, Fluid Mechanics, Mechatronics, Design, Biomaterials, Materials 101, Robotics: Planning and Kinematics, Vibrations, Manufacturing/GD&T, Controls