Jacob Film

Boston-based mechatronics engineer seeking to bring design and implementation support to meaningful technology. Passionate about communication, details, and positive impact.

Jamaica Plain, MA jacobfilm842@gmail.com (518) 598-6979

Education

Northeastern University - Boston, MA . . . . . *Sep. ’21 to Dec. ’23*
M.S. in Mechanical Engineering (Mechatronics)
3.88 GPA and COE Dean’s Scholarship

Coursework:
- Autonomous Field Robotics
- Robotics Sensing & Nav
- Robot Mechanics & Control
- Digital Signal Processing
- Control Systems Engineering
- Mechatronic Systems
- Mathematical Methods for ME’s
- Supervised M.L. & Learning Theory

Messiah University - Mechanicsburg, PA . . . . . *Aug. ’15 to May ’19*
B.S. in Mechanical Engineering
3.98 GPA and Trustee’s (Full Ride) Scholarship

Work Experience

AcousticaBio - Mechanical Design and Automation - Cambridge, MA . . . . . *June ’22 to May ’23*
Mechanical Intern (full-time) *& Mechatronics Engineer* (part-time)
- Prototyped (electromechanical design, assembly, & testing) several iterations of a biological ‘printing’ machine to assist in developing a Harvard lab’s spin-off concept towards a commercially viable product
- Integrated systems for fluid dispensing, apparatus positioning, acoustic resonance tuning, frequency spectrum monitoring, and temp/humidity monitoring and control by combining stock and custom parts
- Facilitated onboarding and mentorship for 3 co-ops (bio and mechanical engineering)

CHA Consulting, Inc. - Mechanical Systems Design - Albany, NY . . . . . *June ’19 to May ’21*
Assistant Engineer II (Mechanical Buildings Group)
- Performed site evaluations, designed steam, hydronic, gas, plumbing, and mechanical air systems, and provided stringent construction administration to help deliver high-quality building projects

Assistant Engineer I (Aquatics Group)
- Developed existing conditions studies, designed circulation, disinfection, filtration, and safety systems, and enforced quality standards for the construction of commercial aquatic facilities
- Passed FE exam (Mechanical Engineering)

Academic Projects

Fire Protection for Developing Rural Communities - Student Project Manager . . . . . May. ’17 to May ’19
- Student Project Manager of a 5-7 member team for 2 years in developing a low-cost rural fire protection unit for a humanitarian NGO client. Oversaw planning for project timeline and deliverables, guided design iterations and testing, and helped enforce and maintain detailed documentation

Image Recognition & Facial Reconstruction - Structure from Motion (SfM) . . . . . Oct. to Nov. ’23
- Integrated (in Python) photogrammetric theory with robust image processing and model optimization techniques to produce a sparse 3D point-cloud facial reconstruction from a series of monocular images

Ultrasonic Room Mapping . . . . . April ’22
- Combined an IMU and an Ultrasonic Transceiver using custom-written device drivers and sensor fusion integration in ROS to create a point-cloud based mobile 2D room mapping device

DC Motor Control & Analysis . . . . . Apr. to May '22
- Modeled (in Simulink) Arduino-based DC motor system based on theoretical fundamentals and manufacturer specifications, compared open loop performance through hardware-in-the-loop data acquisition, and implemented closed-loop speed and position control

Push-Up Performance . . . . . Mar. to May '17
- Derived a push-up performance metric of 'power', collected performance data from 25 students, and built a website to display our data collection process, results, and statistical evaluation for investigated subject correlations

Highlighted Skills

Client-Facing and Internal Communication
- Perceptive and strategic in communication for both internal team settings and external client-facing presentations / design reviews. Intuitive sense for identifying and mitigating misunderstandings

Electromechanical Design & Prototyping
- Adept in translating system-level requirements into detailed design (Solidworks, Simulation Software, Industry Code) and iteratively bringing these designs to life (shop tools, 3D printers, multimeter/ oscilloscope, soldering/wiring)

2D & 3D Building System Modeling
- Experienced in progressing system-level mechanical designs (Autodesk AutoCAD & Revit) through increasing levels of detail in coordination with multiple disciplines to produce clear and buildable construction documents

Software & Hardware Implementation
- Proficient with Python and Matlab (familiar with C++) for use in interfacing with hardware and sensors (motor controllers, pressure/temperature/distance sensors, cameras), automating processes, utilizing specialized packages (ROS, OpenCV, GTSAM), and creating custom functionality

Data-driven Engineering Analysis
- Methodical in developing product analysis and testing procedures with an emphasis on building understanding and directing next steps through basic data visualization

Additional Experience

Uber - Boston, MA *. . . . . July '23 to present*
Rideshare Driver
- Directly interface with a diverse customer base while safely and efficiently navigating Boston

REI - Boston, MA *. . . . . June '21 to May '22*
Sales Specialist (Action Sports and Camping) - 1 year
- Thoroughly yet concisely represent a vast array of outdoor products and help align customer purchases with skill level and equipment needs

Personal Hobbies

- Hiking & Climbing - almost done my 48 NH High Peaks!
- Song Writing/Instrumentation, Recording, and Production
- Aprendiendo Español
- Cycling
- Reading