DANIEL BENJAMIN

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SKILLS

Mechanical: SOLIDWORKS CAD, Waterjet, Composite Layup Manufacture and Post-Processing, 3D Printing
Software: Git, Subversion, Arduino, C, MATLAB, Docker, Atlassian Suite, Adobe CC Suite, MS Office+Project

EXPERIENCE

Undergraduate Research Assistant, UBC MEMS Lab — May 2024 – Present

- Researched tendon-driven prosthetic hands to identify common successful design elements
- Designed a prosthetic hand driven by soft pneumatic actuators 25% more effective at grasping than the previous iteration while using a personal custom shell script for Git version control integration with SOLIDWORKS
- 3D-printed prototypes using a custom-built multi-extrusion 3D printer running RepRapFirmware
- Develop a demonstration platform to allow the prosthetic hand to mimic human hand gestures using MATLAB and Arduino scripts along with a Leap Motion hand-tracking camera module

Chassis Team Member, UBC Formula Electric — Sep 2023 – Present

- Designed 3D-printed enclosures for circuit boards in SOLIDWORKS using SVN for collaboration
- Tested and validated enclosures for compliance with FSAE rules for waterproofing and electrical insulation
- Planned and executed carbon fiber + glass fiber composite layups for car body panels and aero kit
- Cut and ran brake lines through car, in addition to bench bleeding the master cylinder
- Designed and water-jetted metal closeouts and tabs for sides and bottom of chassis

Volunteer, Victoria Hand Project — July 2022 – Present

- Assembled low-cost prosthetic arms with voluntary open/close functionality and an adaptive grasp from a combination of 3D-printed components and metal components like gears and springs
- Contributed concrete ideas to improve assembly speeds, leading to creation of new documentation
- Troubleshot and repaired broken and malfunctioning hands
- Developed design ideas to prevent issues in newly constructed hands by 15%

Student Intern, AES Engineering — Oct 2021 – June 2023

- Performed load calculations for multi-bedroom apartment units using guidelines from the Canadian Electrical Code (CEC) and the BC Building Code (BCBC)
- Read and created electrical wiring diagrams and block diagrams for a school electrical system
- Created power outlet layouts following the CEC and best practices for convenient placement around a room
- Gained experience using industry tools including Bluebeam Revu and DIALux evo

PROJECTS

WeBWorKer Chrome Extension — github.com/danielrbenjamin/WeBWorKer

- Published an extension on the Chrome Web Store with over 550 current users
- Used JavaScript and CSS to provide a real-time LaTeX formatted preview of plaintext math entered in text fields on the WeBWorK homework platform, and show whether entered parentheses are correctly matching
- Polled users for feedback, and developed other quality of life improvements including a built-in search function for the Piazza class forum site along with entry confirmation for questions with limited attempts

EDUCATION

University of British Columbia — Expected Graduation: May 2028
Bachelor of Applied Science – Mechanical Engineering