Calvin **Brereton**

Mechanical Engineer

Currently based in: Kitchener, ON, Canada

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Skills

Professional Experience (in years): **10+** | **9 - 5** | 4 - 2 | < 2

Design	**Solidworks, Iterative Design, Engineering Drawings, DFM, DFA, Fusion 360, Product Design, Specifications, Verification, Validation, Electro-mechanics,** Opto-mechanics, Image Editing
Manufacturing	**Rapid Prototyping, Hand Tools/Machining, 3D Printing (FDM, SLA, SLS, +), Lasercutting, Injection Molding,** Quality Inspection (CTQs), CNC, Sheet Metal, EDM, GD&T, Welding
Analysis	**Root Cause Analysis, Excel/Google Sheets, Tolerance Stackups, Data Management, VBA, Cost Analysis,** GNU Octave, Python, Arduino, Image Analysis, C++, Git, FEA & Simulation, LabVIEW
Professional	**Creative Problem Solving, Communication, Organization, Stakeholders/Requirements, Supplier Relations, Design Reviews,** FCC, UL, CSA, CE/UKCA, QMS, SOPs, ISO 13485
Leadership	**Scheduling/Roadmapping, Task MGMT (ie. Kanban), Mentorship, Team/Project MGMT, Budgeting/BOM, Resourcing, FMEA,** Agile, Conflict Resolution, Performance Tracking

Work Experience

Hardware Designer, ME→ Senior Hardware Designer, ME | Miovision Technologies Inc. | *Nov '21 - Present*
Kitchener, Ontario

- Lead the mechanical development from concept to launch of multiple unique, complex electromechanical products including the Scout Plus Battery Charger, Scout Plus VCU, and Scout Explore architecture, plus two more recent unannounced, particularly innovative products.
- Challenges in this industry include harsh environmental resistance as products sit outdoors anywhere from Quebec to Arizona, including IP ratings, UV resistance, and appropriate certification. Also a strict requirement for vandal (IK) resistance, as well as design for usability (UX), DFM/DFA/DFT, portability in some cases, and more.
- Worked closely with a team of 4 mechanical engineers on projects in lead and peer roles, as well as with a close-knit interdisciplinary team including EE, FW, SW, SC, Mfg, in order to hit tight timelines and ensure smooth release.
- Created numerous software and automation tools to improve our processes, saving multiple hours and reducing errors on every release iteration. Including SW macros, Excel/Sheets macros, AHK scripts, and more, with and without AI.

Mechanical Engineer → Mechanical Manager | Kenota Health | *Aug '20 - Nov '21*
Kitchener, Ontario

- Responsibility as design authority of all major components of the product (consumable tests, blood collector, and benchtop reader)
- Root caused and implemented solutions (leading to successful volume manufacturing) of allergy test and blood collection kits
- Directly and indirectly (managed) made numerous R&D product improvements to complex medical device with 2-axis motion, precision optics, multiple fluid dispense systems, while balancing HFT requirements and resource limitations

Consultant - Prototype Engineering | Spin Master Ltd. | *Apr '20 - Aug '20*
Toronto, Ontario (Remote)

- Significantly improved prototype development workflow by researching and implementing novel digital modelling techniques

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Work Experience (Cont.)

Mechanical Engineer & Hardware Team Lead | **Amina Health** | *May '17 - Apr '20*
Kitchener, Ontario & San Francisco, California

- Complete concept, prototype, & production design of novel cartridge + reader based vitamin measurement system
- Successfully implemented numerous electromechanical jigs for lab use, manufacturing, test/validation, & assembly
- Designed and tested dozens of optical system iterations, using various concepts & technologies to iteratively improve performance
- Created and managed budgets, timelines, inventory, design files, and hardware staff in a cross-functional team

New Products and Process Automation Specialist | **Christie Digital Inc.** | *May '16 - Aug '16*
Kitchener, Ontario

- Independently developed and released projector validation automation software to dramatically improve cost and quality of product
- Directed rollout of test automation software, SVN, LabVIEW & LabVIEW best practices within department group

Product Developer Co-op | **Christie Digital Inc.** | *Jan '15 - Apr '15 & Sep '15 - Dec '15*
Kitchener, Ontario

- Successfully investigated and implemented high volume production of a solution to severe image vibration ('blurriness') in the most widely used projector using novel test methods, brainstorming, and design refinement/selection techniques
- Start-to-finish independent development of C++ application to significantly improve laser projection cinema setup

Omitted: 3 engineering co-ops (Wilco Machine & Mold, Maclean Engineering, Cooke & Denison) + 1 retail job (Pet Valu)
Info available upon request

Relevant Projects

Custom 3D printer | *July '25*

- Complete overhaul of a 3D printer using an Ender 3 as a starting point. Including fully custom mechanics (designed in F360), custom linear rail conversion, upgraded heating, cooling, and QoL features, and various other upgrades.
- Modifications also include wiring in new components, including enclosure lighting, as well as numerous firmware changes like Klipper to enable faster print speeds, more direct control, and local network remote access.

Misc. Hardware Projects | *Continuous*

- Numerous personal projects to develop skills in all areas of hardware, including Raspberry Pi powered magic mirrors, a custom keyboard, hardware shell swaps, teardowns, optimized VR tracking camera array, and many more.

Misc. Creative Projects | *Continuous*

- Dozens of personal projects including dioramas & planters sculpted manually and in VR (then 3D printed), many reupholstery projects including a semi-custom couch, mechanically complex jewelry boxes, and many more.

Education

University of Waterloo
B. A. Sc. in Mechanical Engineering
Waterloo, ON
Sept. 2012 - May 2017

- Graduated with distinction
- Electives focused on Solid Mechanics & Automation

Achievements

- Lead the mechanical development of 5 unique electromechanical products from concept to launch.
- Designed, iterated on, injection molded, tested, and patented (US20190317115A1) a fully integrated, point of care ferritin blood test.
- Resolved final-stage engineering hurdles to get a point of care allergy test system production ready and CLIA-approved, securing 2 patents in the process.

Miscellaneous

- Self-taught most software skills
- Interests are varied, but include:
  - VR & playing/making games
  - Sculpting
  - 3D printing and hobbyist HW
  - Woodworking
  - Travel & being outdoors