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Jake Lepine
Mechanical Engineer

EDUCATION

University of British Columbia **May 2019**
Bachelor's in Mechanical Engineering (Mechatronics Option) with Co-operative Progam Endorsment

WORK EXPERIENCE

Creator Warehouse - Linus Media Group; Langley, Canada **May 2021 - Present**
Mechatronics Design Engineer

- Based on production quantities of hundreds of thousands designed plastic and metal parts and assemblies for mass production using methods such as injection molding, sintering, grinding, stamping, forming and others as appropriate. Also designed more environmentally friendly packaging.
- Wrote magnetic field modeling simulations using python and libraries to optimize the use of rare earth neodymium magnets in the specific application of adhering to ferrous surfaces. Considerations were given to minimizing the use of expensive materials (the neodymium) and difficult manufacturing processes (CNC machining, complex manual assembly) Simulations were validated with real world force data
- Managed project time lines, Conducted engineering validation testing, design validation testing, production validation testing, etc
- Sought, vetted and approved suppliers, and set up supply chains.
- Set up, operated and maintained all equipment for the in-house machine shop. Including industrial CNC, Laser cutter, 3D printers, other metal welding and fabrication equipment. A part of this meant ensuring safety procedures were followed, PPE was available to all users and MSDS was up to date.
- Supported film and video production as necessary by providing technical expertise and problem solving.

Knight Signs; Delta, Canada **Nov 2019 - Aug 2020**
Technical Design Engineer

- Used AutoCAD to produce formal annotated engineering drawings for structural signs, in various cities around North America, using aluminium, stainless steel, structural steel, and industrial plastics to meet local building code standards (generally BCBC)
- Designed electrical enclosures weatherproofed to withstand environmental stresses (IP68 equivalent and UV resistance)
- Performed analytical stress testing for wind and snow loading, fatigue, solid mechanics analysis, and jointing method selection. Targeting 50 year reliability.
- Reviewed other engineer’s work and provided technical support to fabricators

Tesla Motors; Fremont, California **Oct 2015 - Apr 2016**
Powertrain Product Excellence Electrics Engineering

- Set up in-line quality controls and standards for the NEMA adapter production line, conducted PVT tests, developed training procedures, wrote work instructions, trained associates, set up inline quality tests.
- Monitored NEMA adapter line using Tesla internal quality managment systems such as, SPC, result viewer, etc. Improved FIFO standards, enforced 5S protocols, updated PFMEAs and control plans.
- Solved quality issues using statistical tools such as JMP to troubleshoot ultrasonic welded joints, crimp joints, oxidation issues. Made data drive quality decisions during time sensitive line down situations.
- RCA of the vehicle Charge Port system, contained and resolved water ingress issues to charge port door electronics enclosure and associated customer reported defects.
- Conducted containments, including inventory sorts, worked closely with suppliers using SCARs to establish clean points and countermeasures, clarified questions about design intent and tolerancing, drove defects to closure and tracked effectiveness afterwards.

Strait Access Technology; Cape Town, South Africa **May 2015 - Aug 2015**
Mechanical Design

- Used AGILE methodology primarily the SCRUM process, to efficiently work with teamates and drive design forward.
- Data analysis of flouroscopy, echocardiography, surgical notes and testing data using Matlab, ANOVA, normal distributions, t-tests.
- Designed 6 DOF stand for mitral valve repair device using Solidworks, as well as for camera mounts, screen mounts and other peripheral operating room equipment.
- Sourced and ordered commercial and custom parts and stock from external suppliers.
- Repaired and assembled miniature mechanical and electrical components

Kardium; Vancouver, Canada **Sept 2013 - Apr 2014**

Verification and Validation Engineering

- Designed equipment for mechanical testing of a heart ablation catheter under development, to meet FDA and CE mark requirements for a class 3 medical device.
- Fabricated testing equipment in company's in-house machine shop using CNC machines.
- Integrated software, electrical, and mechanical systems of testing equipment with testing procedures.
- Performed both destructive and nondestructive testing of heart ablation device.

TECHNICAL VOLUNTEER EXPERIENCE

German Aerospace Center and CARIS Lab; Vancouver, Canada **Sept 2017 - Apr 2018**

Mechanical Designer and Tester

- Mechanical Designer, and client liaison, for building a proof of concept robotic arm end effector, with the purpose of sensing and manipulating flexible sheets of vacuum bagging film, for use in the layup of carbon fiber parts.
- Mechanical design using SolidWorks and manufacture of PLA and aluminium components of end effector, (Using a combination of 3D printed and milling)
- Design of a 1.5 square meter testing bed, including overhead gantry.
- Programmed embedded micro controller (C++)
- Design review of custom PCB.
- Integration of data from an array of sensors (ultrasonic, pressure senor, strain, tilt and rotation) along with user input to control both the end effector and robotic arm (ROS, C++, electrical prototyping)
- Design of experiment and verification testing

NOAA and UBC Research; Vancouver, Canada **May 2013 - June 2013**

Research Assistant

- Used the UBC wind tunnels to aid in researching the effect of a GPS tracker on the hydrodynamic drag of sea turtles at different times during their migration cycles. This was to better understand how the GPS tracker itself will effect the drag coefficient of individual turtles.
- Studied best locations for a researcher to glue a GPS tracker to a turtle's shell to minimize drag

PERSONAL PROJECTS

Home Prototyping Shop

- Built and modified 4 axis CNC milling machine. Set up G-Code interpreter (LINUX CNC), refined electronics, added a 4th axis, replaced and trued a spindle (and squaring all axes), and stiffening to cut aluminium or steel.
- 3D printer setup (Crealty CR-10) Including replacing bowden tube extruder head with a custom direct drive system for increased reliability.
- Adding other, non-computer controlled tools for metalworking and woodworking, such as saws, a welding torch, a grinder, various other hand tools, etc

Boat and watercraft Repair

- Rebuilt internal wooden structure, plumbing, electrical of a fibreglass sailboat and lived on it for a year.
- Repaires paddleboards, kayaks, canoes, etc, with fibreglass.