

# ERICH DEETLEFS

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## WORK EXPERIENCE

### Electrical Engineer

Motorola Solutions

Vancouver, BC

May 2025 - CURRENT

- Delivered over **\$1 million in annual savings** by leading strategic cost-reduction initiatives and optimizing bill-of-materials (BOM) across the full project portfolio.
- Led **Root Cause Analysis (RCA)** investigations on camera hardware failures, identifying critical defects to resolve RMA cases and implementing corrective actions in production.
- Engineered automated testing protocols for eMMC diagnostics and trained technical staff, significantly reducing troubleshooting time and increasing testing throughput.
- Redesigned PCB layouts to utilize application-specific ICs, successfully replacing bulky discrete component networks to miniaturize the form factor by over 50% and improve signal integrity.

### Imaging / Design Validation Intern

Motorola Solutions

Vancouver, BC

January 2023 - December 2023

- Implemented automated testing using **Python** and **Shell** scripting, reducing testing time by 50% and increasing accuracy of test results by 35%.
- Tested optical, mechanical, and electrical systems under temperature ranges from -40°C to 60°C and redesigned faulty components, improving overall product durability by 10%.

### Network Infrastructure Engineer, Mechanical Designer (Part-Time)

BX Medical

Vernon, BC

August 2016 – May 2025

- Designed, manufactured, and built 10+ custom micro-ITX computer systems using **SolidWorks** and **3D printing** following DFM/DFA guidelines, optimizing hardware performance and workspace environment for medical professionals.
- Built and maintained an interconnected computer network of 15+ workstations that increased internal communication and productivity by 25%.

## PROJECT EXPERIENCE

### Machine Learning in ECG Analysis

Machine Learning Engineer

Surrey, BC

January 2024 – May 2024

- Developed a heartbeat categorization system achieving a **96.7%** test accuracy on the MIT-BIH dataset by architecting and tuning a **Convolutional Neural Network (CNN)** across 96 parameter permutations.
- Validated real-world model robustness by demonstrating the CNN's superior classification of live ECG readings over **KNN** and **Random Forest algorithms**, achieved through extracting and digitizing Apple Watch Series 6 and 12-Lead ECG image data using WebPlotDigitizer.
- Enhanced the visual interpretability of complex datasets by applying **Principal Component Analysis (PCA)** to generate **2D and 3D cluster projections**, successfully identifying and mapping 14 overlapping ECG subcategories.

### Deep learning Tumor Detection from MRI Scans

Project Manager, Mechanical Lead / Electrical Lead

Surrey, BC

January 2024 - August 2024

- Engineered a multi-class **computer vision** diagnostic tool for brain tumor MRI classification, achieving optimized validation accuracy, precision, and F1 scores by architecting and training **Keras-based Artificial Neural Networks (ANNs)** and customized **LeNet-5 Convolutional Neural Networks (CNNs)**.
- Deployed a **real-time object localization model** utilizing computer vision techniques for MRI tumor detection, attaining strong mAP@50 performance scores by generating an augmented, **custom-annotated dataset via Roboflow and fine-tuning a YOLOv5 PyTorch algorithm**.

### UAV Launch System

Project Manager, Mechanical Design Lead

Surrey, BC

September 2022 – December 2022

- Directed a 4-person engineering team in the mechanical design of a portable UAV launch system, achieving aircraft cruising speeds exceeding 40 m/s in under 0.8 seconds for a 20 kg payload.
- Optimized the mechanical launch system for field portability by executing **FEA** simulations and **generative design modeling** in **SolidWorks**, yielding a 25% lighter and 30% more compact footprint compared to baseline concepts.

## SKILLS

**Design:** SolidWorks, Fusion 360, Altium, KiCAD, Blender, Microcontrollers, DFM, DFA, FDM/SLA Printing

**Analysis & Control:** Python, C++/C, MATLAB, Simulink, Shell

**Automation & ML:** Un/Supervised Learning, Neural Networks, Computer Vision, Electronics Anomaly Detection

## EDUCATION

Simon Fraser University

Mechatronic Systems Engineering

Surrey, BC

September 2019 – May 2025