Eidan Erlich

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EDUCATION

University of Waterloo, BASc, Mechatronics Engineering (3.75/4.00 GPA) — Expected 2027
- Relevant Courses: Data Structures and Algorithms, Circuits, Mechatronics Design, Introduction to Machine Learning

SKILLS

Languages: C++, Python, Java, Git, HMTL, CSS, MATLAB

Frameworks: OpenCV, Scikit-learn, TensorFlow, YOLOv5, MoViNets

Tools: SolidWorks, AutoCAD, GitHub, Excel, MS Azure, JIRA

PROFESSIONAL EXPERIENCE

Biomedical R&D Project Manager, *Vitreous Retina Macula Specialists of Toronto* — Feb 2022 – Oct 2022
- Independently researched and fully designed ophthalmological surgical instruments using 3D printing technology
- Pioneered proof of concept for using 3D printing in a clinical setting, using DFMA to **reduce manufacturing costs by over 90%**
- Root cause analysis and DOE on feedback from MD residents were used to revise prototypes
- Authored technical reports with statistical analysis and visualization for an upcoming publication
- Ongoing project consultant, instructing and guiding a multidisciplinary team composed of MD residents and masters' students

IT Operations and Optimization Analyst, *Illumiti* — Jul 2022 – Aug 2022
- Automated data analytics using Excel and VBA from Microsoft Azure database, **reducing processing time by 50%**
- Integrated over 1000 user licenses and updated Microsoft Intune policies, **increasing efficiency by 20% for over 5000 clients**
- Led a research team and worked with a senior solutions architect to successfully roll out and integrate two network performance monitoring solutions, which were deployed to over 20 virtual and physical servers
- Drafted over 30 legal documents, covering areas such as cybersecurity and company property, resulting in the protection of the company's assets and minimizing legal risks and liabilities

PROJECTS

Vehicle Platform Division - University of Waterloo Autonomous Vehicle Design Team — Jan 2023 – Present
- Contributing to the development of a level 4 autonomous vehicle to compete in the SAE AutoDrive Challenge
- Automating calibration of LIDAR, radar, stereo/wide-angle cameras, and other sensors for improved accuracy in perception
- Assisting in the design, fabrication, and testing of custom PCBs and controllers for the vehicle
- Interfacing CAN buses to send autonomous control signals and conducting reliability testing

Real-Time Rock-Paper-Scissors Prediction with OpenCV and DNN — Jan 2023 - Present
- Implementing a CNN model for predicting rock-paper-scissors movements utilizing **OpenCV, TensorFlow, and MoViNets**
- Optimizing performance through Python-based training and C++ deployment
- Implemented thorough data pre-processing steps to enhance model precision, **resulting in an 84% accuracy rate**

Machine Learning Home Price Prediction with scikit-learn in Python — Dec 2022
- Trained 2 supervised machine learning models to precisely predict house prices by analyzing metrics from public datasets
- Utilized mean absolute error and cross-validation trade-off to optimize decision tree depth, **maximizing model accuracy to 75%**
- Improved prediction algorithm by using a random forest model, **increasing accuracy to 85%**

Autonomous Machine Vision Algorithm, Toyota Innovation Challenge — Oct 2022
- Developed an autonomous machine vision algorithm to track a 1:24 scale car within a simulated manufacturing environment
- Utilized **OOP** in **C++** and tracked the real-time position of the car, with **100% successful object recognition and classification**
- Collaborated with a multi-faceted team, ensuring all project constraints were successfully met within the time limit

Chess Robot, *University of Waterloo* — Oct 2022 – Dec 2022
- Designed and integrated a 3-axis claw system to move the claw and individual pieces with **+/- 1 cm precision**
- Developed and assembled the power system using motors, sensors, and actuators to ensure accurate movement
- Implemented agile development techniques in **C++** and integrated with the mechanical assembly

Electric Go-Kart Design Lead — Sep 2021 – Jun 2022
- Fully designed and fabricated an electric Go Kart using machine shop tools
- Selected and sourced key components such as motor controllers, batteries, and mechanical modules, **staying 20% under budget**
- Integrated electronic controls with the custom powertrain to optimize the power to weight ratio, **increasing power by 150%**