

# Eidan Erlich

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I have 4 years of experience in software development, with firsthand experience in R&D and ML

## 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, HTML, CSS, MATLAB

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

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

## PROFESSIONAL EXPERIENCE

Technical Biomedical R&D Project Manager, *Vitreous Retina Macula Specialists of Toronto*

Feb 2022 – Oct 2022

- Proactively initiated, 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**
- Directed 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

Indy Autonomous Challenge – Perception Team, *MIT-Pitt-RW (WATORACE)*

Jan 2023 – Present

- Collaborating with undergraduate and graduate students to integrate data from **6 cameras**, **3 Lidar**, and **3 radar** sensors
- Training and deploying **YOLOv5** for detecting race cars in real-time, using **TensorRT** and **C++** to successfully **track cars at 200+ kph**
- Developing an end-to-end **auto labeling** pipeline from recorded data to improve dataset quality

Real-Time Rock-Paper-Scissors Prediction with OpenCV and Neural Networks

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%**