Eidan Erlich

+1 (647) 462-8746 | emerlich@uwaterloo.ca | eidanerlich | EidanErlich | eidanerlich.github.io

Proven Leadership in Autonomous Robotics, Machine Learning, and Cutting-Edge R&D

Education

- **University of Waterloo** *2022 - 2027*
  BASc, Mechatronics Engineering GPA: 3.75/4.00
  - Courses: Data Structures & Algorithms, RTOS, Digital Logic (VHDL, PLC), Numerical Methods, Sensors, Physics 1&2, Statistics

Experience

- **Symphonic Labs** *Sep 2024 - Dec 2024*
  Machine Learning Research Lead San Francisco, USA
  - Led development of a state-of-the-art video lip reading model that improved performance by over 10%
  - Designed and implemented an Natural Language Processing (NLP) model for audio reconstruction from video input, recreating spoken sounds with high accuracy
  - Engineered distributed training infrastructure across multiple cloud nodes

- **Institute of Aircraft Production Technology (Airbus) – TU Hamburg** *Jan 2024 - April 2024*
  Aircraft Production Research Assistant Hamburg, Germany
  - Led and architected a mobile, multimodal, vision-based data acquisition system for Airbus
  - Leveraged classical and deep learning methods for robust SLAM, segmentation, and classification
  - Dockerized and deployed application to cloud compute resources, streamlining code distribution and execution

- **Monsters Aliens Robots Zombies** *May 2023 - Aug 2023*
  Machine Learning Research Intern Toronto, Canada
  - Fine-tuned a CNN and GAN model pipeline for feature recognition and augmentation for effective lip syncing
  - Created a high-level architecture for video synthesis using Latent Diffusion with image & audio conditional encoding
  - Implemented a highly requested user feature of multi format compatibility, driving revenue growth of over $150,000
  - Optimized training pipeline by creating a cloud-based queue system, reducing training time by over 40%

- **MIT-PITT-RW Autonomous Racing - Indy Autonomous Challenge** *Feb 2023 - Present*
  General Manager Waterloo, Canada
  - Lead a team of 50 undergraduate and graduate researchers in developing the software driving a fully autonomous Indy racecar, competing in the Indy Autonomous Challenge, the world's highest-speed driverless competition
  - Direct both technical development and business strategy by orchestrating strategic plans and setting achievable KPIs
  - Coauthored a dataset research paper submitted to ICRA 2025, concentrating on supervised and self-supervised state estimation, dynamics modeling, motion forecasting, and perception for high-speed autonomous vehicles
  - Developed an extended Kalman filter in Python and ROS2, leveraging sensor fusion for agent tracking and prediction

- **Vitreous Retina Macula Specialists of Toronto** *Feb 2022 - Oct 2022*
  Biomedical Research Lead Toronto, Canada
  - Proactively initiated, researched, and fully designed 3D printed ophthalmological surgical instruments
  - Led a team of MD and master's students, conducting root cause analysis and designed experiments on feedback to refine prototypes
  - Pioneered proof of concept for 3D printing in a clinical setting, leveraging DFMA to reduce manufacturing costs by 90%

Publications

[1] P. Prünte, J. Determann, K. Moenck, **Erlich, E.**, D. Patki, F. Bittec, M. Gomse, and T. Schüppstuhl. **Leveraging passive monitoring applications in production and intralogistics** in Proceedings of the 18th CIRP Conference on *Intelligent Computation in Manufacturing Engineering* Hamburg, Germany, 2024.

[2] Prünte, P., Determann, J., Moencka, K., **Erlich, E.**, Patki, D., Bitte, F., Gomse, M., & Schüppstuhl, T. **Mobile, multimodal, vision-based data acquisition system for passive monitoring in production and intralogistics** in Proceedings of the 18th CIRP Conference on *Intelligent Computation in Manufacturing Engineering* Hamburg, Germany, 2024.

Proficiencies

Languages: Python (6 years), C++ (5 years), C (2 years), JavaScript, jQuery, HTML, CSS (1 year), SQL (2 years), Java (3 years)

Libraries & Tools: PyTorch, TensorFlow, RestAPI, FastAPI, Git, Linux, VS Code, Visual Studio, Django, React

Software Experience: Website Development, Object-Oriented Programming, Data Structures and Algorithms, Scripting, Data Analysis, Testing, Debugging, Model Development, Model Training, Machine & Deep Learning, Computer Graphics