

Work Experience

- **Software Engineer (ML) - SensorCortek Inc. - Canada** 05/2022 - present
 - Built an end-to-end computer vision platform for multi-person re-identification to be used to generate business insights and time of service in retail stores.
 - Designed novel architectures to perform fast top-view object detection using radar range-angle-azimuth signals.
 - Technologies: (PyTorch, Flask API, OpenCV, Numpy, Python)
- **Technical Co-founder - VRapeutic Inc. - Canada** 01/2021 - 04/2022
 - Led development of WebXR therapeutic modules for ADHD-diagnosed children, securing six-figure fund from UNICEF
 - Re-architected the backend by applying test-driven & clean architecture principles, increasing test coverage to 90%
 - Separated monolith-backend's controllers into serverless functions saving more than 50% on cloud operational costs
 - Developed the CI/CD pipeline using Infrastructure-as-Code, leading to a reviewable and non-manual delivery process
 - Technologies: (Node.js, Jest, MySQL, Docker, AWS, CircleCI, Serverless, React, Typescript)
- **Software Engineer (ML) - SensorCortek Inc. - Canada** 05/2020 - 12/2020
 - Designed a novel learnable sensor fusion mechanism boosting localization accuracy by 9% compared to fixed operators
 - Developed SCAN.3D; a web-based multi-modal (RGB/3D) data annotation tool to build autonomous driving datasets ↗
 - Implemented real-time visualizer for cars' multi-sensory data streams to validate the quality of autonomous driving data
 - Technologies: (TensorFlow, Keras, OpenCV, Pandas, Numpy, CometML, Python, Three.js)
- **Graduate Researcher - VIVA Lab/Synopsys Inc. - Canada** 09/2019 - 05/2020
 - Designed light-weight CNN architectures for multi-view car detection. Technologies: (TensorFlow, CometML, Python)
- **Teaching Assistant - University of Ottawa - Canada** 09/2019 - 09/2021
 - Taught technical concepts in Data Structures & Algorithms ; Advanced Topics in C++ ; Programming Paradigms
- **Software Engineer (ML) - Intelligent Systems Lab - Egypt** 07/2018 - 04/2019
 - Built a web-based human pose estimation app ↗. Technologies: (TensorFlow.JS, Keras, Angular, Python, Typescript)

Education

- **Master of Computer Science in Applied Artificial Intelligence** 09/2019 - 09/2021
University of Ottawa - Canada | [Link to Thesis](#) ↗ **GPA: 10.0/10.0**
- **Bachelor of Science in Computer Engineering** 09/2014 - 07/2019
Arab Academy for Science and Technology - Egypt **GPA: 3.9/4.0**

Selected Projects

- Designed **Deep Q-learning** agent to generate adversarial samples using reinforcement learning (Python) ↗
- Developed **Vynd Rest API** to detect, group, & match faces in videos using deep learning (Python) ↗
- Built **2048-Game Bot** that evolves neural network using genetic algorithms to achieve high scores ↗

Awards

- **Mitacs** - Received the Research Scholarship in collaboration with Synopsys as industrial partner **(2019)**
- **ICPC** - Finalist in Egypt and Arab ACM collegiate competitive programming contests, used C++ **(2016)**

Extracurricular Activities and Leadership

- **Inventor** - Patent: System and Method for Customizing A Virtual Reality Experience - 63/308,347 **(2022)**
- **Lecturer** - Taught the topic of Computer Vision through an official course at the ITI AI-Track **(2021)**
- **Instructor** - Helped undergrad students kick-start their AI journey through a Deep Learning course **(2019)**