Avid Eslami

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Education

- **University of Toronto** Toronto, CA
  *Bachelor of Applied Science in **Computer Engineering*** *Sep. 2021 – Present*
  - **ECE243**: Computer Organization
  - **ECE311**: Introduction to Control Systems
  - **ECE345**: Algorithms and Data Structures
  - **ECE297**: Software Communication and Design
  - **ECE244**: Programming Fundamentals
  - **ECE344**: Operating Systems
  - **APS360**: Applied Fundamentals of Deep Learning

Experience

- **MLDSAI Inc.** Toronto, CA
  Machine Learning Engineer Intern *May. 2023 - Aug. 2023*
  - **OpenAdapt**: Worked on the OpenAdapt project which focuses on creating an open source tool for generalized process **automation** through **transformers**.
    - **Machine Learning**: Implemented and rigorously evaluated **LLM's** such as **RWKV**, then **finetuned** them to elevate their performance on sophisticated tasks.
    - **Software**: Created several API / software tools with **Python** to be used during process replays. Tested various components to ensure optimal functionality through rigorous testing and refinement.
    - **Vector DB**: Setup **ChromaDB** and researched novel methods for determining the number of closest results.
    - **Automation**: Created ReplayStrategies to guide the **LLM's** and provide them access to the resources and tools to successfully complete tasks for the user autonomously.
- **Unmanned Aerial Systems - UofT Aerospace Team** Toronto, CA
  Reinforcement Learning Research Lead Engineer *Oct. 2022 - Present*
  - **Autonomous Drone Racing**: Wrote quad-copter code in the **ROS** environment to implement **state estimation** and **localization**. Implemented a novel non-linear **model predictive contouring control** system using principles of **numerical optimal control** in **C++**. Currently exploring **PPO** based **RL** to enhance drone performance.
- **SkateScribe** Toronto, CA
  Research Assistant *Jul. 2022 - Aug. 2022*
  - **End Mill Testing**: Developed a testing framework to gather data on improving the surface finish of blades sharpened on the SkateScribe mill. Discovered bugs in the SkateScribe interface and path algorithm.
- **Arshvid Technology** Toronto, CA
  Software Developer *Dec. 2020 - Aug. 2021*
  - **Green House Controller**: Developed a tool for remote monitoring and actuation of systems within the greenhouse.
    - **Front-End**: Used **React.js** and **Bootstrap** to show greenhouse statuses, including pumps and alarms.
    - **Back-End**: Used **Python** for Raspberry Pi to measure and control GPIO pin voltages for greenhouse operations.

Software Projects + Awards

- **Terminal Competition Winner**: Implemented various **AI algorithms** such as **minimax** to win 3rd place in the largest university-level game-based **AI** competition hosted by Citadel and Citadel Securities. Competed against students from a variety of universities within the midwest region to win a total of **$3500 USD**.
- **GIS-YummyMap**: Developed an interactive **GIS** application using **STL** and the Open-Streets-Map database in **C++**. Implemented **Parallel Multidestination Dijkstra** and **2-Opt** to solve the travelling salesman problem swiftly.
- **Automatic Fruit Ripeness Classifier**: Created a deep **CNN** model for computer vision to analyze images of fruits and determine their ripeness. Developed using **PyTorch** in **Python** and achieved an accuracy of roughly **90%**.

Programming Skills

- **Languages**: Python, C/C++, C#, ARM Assembly, JavaScript, SQL, MATLAB, HTML/CSS
- **Technologies**: Git, HuggingFace, PyTorch, CUDA, NumPy, Pandas, Unity, ROS, React, Node.js, ChromaDB, FPGA/Intel Quartus Prime, Verilog, ModelSim, NI MultiSim, Modal, Vast.ai