Artin Molaei-Forouhar

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Education

University of Toronto Expected: May 2026

Bachelor of Applied Science in Computer Engineering (GPA: 3.96 / 4.00) *Toronto, Ontario*

- **Relevant Coursework:** Programming Fundamentals (C++), Linear Algebra (MATLAB), Digital Systems (Verilog), Computer Organization (Assembly), Software Communication and Design (C++), Signals and Systems (MATLAB)

Experience

Autonomous Drone Racing Team October 2023 – Present

Member of Reinforcement Learning/ Control Division *Toronto, Ontario*

- Customized Flightmare's quadrotor simulator, tailoring it to the specific requirements of our team's training objectives using Python, C++, and Unity.
- Instrumental in crafting a dedicated testing environment using the simulator's toolkit. Developed an advanced timer feature that precisely measures drone travel time, facilitating benchmarking against other teams' performance.
- Currently working on integrating realistic flight paths within the Unity environment by incorporating gate structures.

Robotics Team Oct 2021 – June 2022

Programming Lead *Richmond Hill, Ontario*

- Lead Java developer for the club's programming division, overseeing all aspects of the Robot's programming (ie: motor controls) while managing and supervising the programming team, ensuring effective execution of tasks.
- Self-studied the FIRST Robotics Control System and taught members Java, Visual Studio Code, and WPILib.

Projects

Deep Learning and AI | *Python, PyTorch, Matplotlib, CNNs, Transfer learning*

- *Fruit Ripeness Detection:* Developed an image processing Python script using PyTorch to generate labeled training and testing datasets. The script incorporates advanced data augmentation techniques to counteract data insufficiency. Performed systematic tuning of hyperparameters for diverse CNN architectures, achieving an accuracy of 87%. Conducted extensive qualitative analysis using Matplotlib visualisations.
- *Hand Gesture Recognition:* Designed and implemented a high-performance CNN architecture with optimization techniques such as batch normalization, zero padding, and dropout regularization. Utilized backpropagation with a cross-entropy loss function and SGD with momentum optimizer for training. Incorporated transfer learning from the torchvision AlexNet model, surpassing 97% in testing and validation accuracy.

Engineering Project Management and 3D Modeling | *Fusion 360, Project Management, Engineering Strategies and Practice*

- Managed and coordinated project deliverables while ensuring the client's needs are fulfilled.
- ESPI: Modeled a 3D prototype of a redesign for Sidney Smith building's east facade.
- ESPII: Designed a precise 3D model for a wooden bridge for implementation at Bruce's Mill Conservation Park.

BioBlender | *Android Studio (mobile development), Chaquopy Python SDK, UofTHacks X, Serp API, OpenAI, Git Version Control*

- Co-developed an android app that generates a unique animal using algorithms involving Openai API to help process the traits & characteristics of two input animals, and then outputs a resulting image using Serp Api.
- Diligently distributed tasks within the 36 hour time constraint, and synchronized progress using Git version control.

Rubik's Cube Simulator | *Java, 3D Graphics and Algorithm Implementation*

- Developed a program that allows users to interact with a virtual Rubik's cube in an intricate 3D environment.
- Utilized 2D Java libraries and advanced mathematical & programming algorithms to create an immersive 3D space.

Personal Website | *JavaScript, React, CSS, HTML, Media Queries*

- Checkout my other projects and more about me here: https://artins-portfolio.netlify.app/.

Technical Skills

Languages: Java, Python, C/C++/C#, HTML/CSS/JS, Matlab, Verilog, SQL, Assembly
Technologies: React.js, PyTorch, Chaquopy SDK, MySQL, Modelsim, Quartus, FPGA, CPUlator, Unity, VS Code, Android Studio, Tensorflow, Pandas, NumPy, Matplotlib, PyGame, Pillow, WPILIB
Concepts: Version Control, Deep Learning, Artificial Intelligence, Machine Learning, Neural Networks, API, Data Normalization, Agile Methodology, Mobile Development