Ali Kuwajerwala

Lifelong learner and always curious. Looking for positions in machine learning and/or robotics.

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EXPERIENCE

Software Developer - EPSON (2018-2019)
Robotics (Computer Vision / Evaluation Team)

- Developed 3D object detection and pose estimation technologies for commercial computer vision applications.
- Automated evaluation tasks using **Python** and **Bash** scripts substantially increasing (upto 5x) the amount of evaluations run each day.
- Implemented several features for an 'Evaluation Manager' tool written in **C++**
- Evaluated algorithm concepts and analyzed research results to diagnose and fix detection/estimation issues.

Teaching Assistant - UofT (2017-Present)
- Data Structures and Analysis (CSC263)
- Intro to the Theory of Computation (CSC236)

- Taught new course material in weekly tutorials and worked through problem sets with students.

EDUCATION

University of Toronto (2015 - 2020)
H.B.Sc. Computer Science Specialist
& Mathematics Major
CGPA: 3.63 - Dean's List Scholar

UTM Robotics Club (Co-Founder / Head of Operations) ⬀
- Ongoing Project: Building a self-balancing inverted pendulum.
- Ongoing Project: Using mini-robot cars to collect garbage on campus.
- Organized and led Arduino & 3D-Printing workshops and project demos.

Math & CS Society (VP of Internal Affairs) ⬀
- Launched an internship track initiative to help new students land internships in their junior years.
- Led resume workshops, coding challenges and interview prep sessions.

PROJECTS

Feature Visualization for Neural Networks
(Jupyter Notebook Tutorial): ⟁ ⬀

- Built an interactive tutorial that analyzes how Neural Networks build up their understanding of images using **TensorFlow**, **DeepDream** and **Lucid**.
- Users can upload their own image, choose the features to visualize & easily customize algorithm parameters using a GUI.
- Presented the tutorial as a workshop for the UTM ML Reading Group and the UTM Robotics Club.

Adversarial Attacks on Self Driving Cars
(Ongoing Research Project under the UofT Robotics Institute): ⟁ ⬀

- Exploring various ways to trick self driving cars by adding harmful noise to their inputs and causing them to crash.
- Methods so far include adversarial billboards placed in the car's view and targeted noise pixels directly to the input.

NeoCirkuits (Android App): ⟁ ⬀

- Made a math (graph theory) based puzzle game for Android using **Java** in **Android Studio**.
- Implemented a fully featured creator tool allowing users to create their own levels.
- Collaborated with Professor Alex Rennet to use NeoCirkuits in the 'Introduction to Combinatorics' course at UofT.

Atari Pong AI (Deep RL Project): ⟁ ⬀

- Implemented a Deep Q Learning algorithm to play the Atari 2600 Pong game using **PyTorch** and **OpenAI Gym**.
- Experimented with various optimizations such as Prioritized Experience Replay, Fixed Target Networks and Double DQN.
- Achieved a mean reward of 19.5/20 after training on a million frames.

SOFTWARE SKILLS

LANGUAGES	Python, C, Java
TECHNOLOGIES	PyTorch, OpenAI Gym, OpenCV, Android Studio