Ali Kuwajerwala

M.Sc. Candidate, University of Montréal & Mila

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Actively seeking internships in machine learning and/or robotics for summer 2022.

Experience

Machine Learning/Software Engineer, Liquid Analytics (Startup) Summer 2021
Perform AI Application, Core Algorithms Team *(Remote, US)*

- Developed highly scalable algorithms in **Julia** to quickly process logistics data for large distribution companies.
- Set up queing infrastructure using **AMQP** and **RabbitMQ** to handle upto 300,000 requests each second.
- Deployed **AWS** services to efficiently host our software in the cloud, simplifying the CI/CD pipeline.

Robotics Researcher, RVL Lab Sep. 2020 – Apr. 2021
Robot Vision and Learning Lab, University of Toronto *Toronto, ON*

- Developed novel data augmentation techniques for improved autonomous driving performance in mobile robots.
- Responsibilities: data collection, performing simulation experiments, designing/debugging the ANN architectures.
- Performed real robot experiments with a Husky robot; including sensor setup and **ROS** Node configuration.
- Joint first author for: Sharma D, **Kuwajerwala A**, Shkurti F. *Augmenting Imitation Experience via Equivariant Representations.* arxiv.org/abs/2110.07668 (Paper currently under review for ICRA 2022)

Software Developer, EPSON Jul. 2018 – Apr. 2019
Machine Vision Team, Robotics Department, EPSON Canada *Markham, ON*

- Developed 3D object detection and pose estimation technologies for commercial bin picking robots.
- Automated evaluation tasks using **Python** and **Bash**, increasing (upto 5x) the amount of tasks run each day.
- Evaluated and debugged algorithms, analyzed research results to diagnose and fix detection/estimation issues.

Teaching Assistant, University of Toronto Sep. 2017 – Dec. 2020
Department of Computer Science, University of Toronto *Toronto, ON*

- Modified and updated existing assignments for remote delivery (using ssh and VNC) during the pandemic.
- Courses: Mobile Robotics (CSC477), Data Structures and Analysis (CSC263), Theory of Computation (CSC236).
- Prepared and taught lectures, designed & graded assignments, designed marking schemes & graded tests.

Projects

All code available on Github – see my website.

Backwards Reachability: A Tutorial | *Matlab, Reachability Analysis* Dec. 2020

- Tutorial covering the current available tools and theory fundamentals for reachability projects at UofT's RVL Lab.

Feature Visualization for ANNs (Workshop) | *Jupyter Notebook, Python, Tensorflow* Dec. 2019

- Workshop presented at UofT ML Reading Group, rated 4.4/5 stars in feedback survey, with 60% of 31 respondents requesting a follow-up workshop.

NeoCirkuits (Android App) | *Java, Android Studio* Summer 2018

- Developed a math (graph theory) based puzzle game for Android with 60+ levels included and a level creator tool.
- Currently has 500+ downloads on the Play Store and is rated 4.9/5 stars. All code available on Github.

Education

University of Montréal & Mila
M.Sc, Computer Science (Robotics and Artificial Intelligence) *Sep. 2021 – May 2023*

- **Supervisor:** Prof. Liam Paull, director of the Montreal Robotics and Embodied AI Lab.

University of Toronto
H.B.Sc, Computer Science & Math ***CGPA:*** *3.63* *Sep. 2016 – May 2020*

- **Award:** Received the NSERC Undergraduate Student Research Award, a value of $5600. (2020)
- **Extracurricular:** Co-Founder & Head of Operations of the Robotics Club. (2019-2020)

Technical Skills

Languages: Python, Julia, C/C++, Java, SQL
Developer Tools: Git, ROS, Amazon Web Services, OpenAI Gym, Andriod Studio, CUDA, ssh, VNC
Libraries: PyTorch, Tensorflow, OpenCV, pandas, NumPy, scipy, Matplotlib, Plotly