Ali Kuwajerwala
M.Sc. Candidate, Mila & University of Montréal

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AI and robotics researcher with a strong background in deep learning, large language and vision models, mobile robotics, and reinforcement learning. Seeking research roles for 2024 onward.

SELECTED PUBLICATIONS (MASTER'S RESEARCH)

ICRA 2024   **Kuwajerwala, A.**, Gu, Q., Morin, S., Jatavallabhula, K. M., Sen, B., Agarwal, A., Rivera, C., Paul, W., Ellis, K., Chellappa, R., Gan, C., Melo, C. M., Tenenbaum, J. B., Torralba, A., Shkurti, F., Paull, L., *ConceptGraphs: Open-Vocabulary 3D Scene Graphs for Perception and Planning (Currently Under Review)*. URL: https://concept-graphs.github.io.

RSS 2023   Jatavallabhula, K. M., **Kuwajerwala, A.**, Gu, Q., Omama, M., Chen, T., Li, S., Iyer, G., Saryazdi, S., Keetha, N., Tewari, A., Tenenbaum, J. B., Melo, C. M., Krishna, M., Paull, L., Shkurti, F., Torralba, A., *ConceptFusion: Open-set Multimodal 3D Mapping*. URL: https://concept-fusion.github.io.

EXPERIENCE

Applied Scientist Intern, Amazon   Summer 2022
Alexa AI Team, Amazon Devices   *(Toronto, ON)*
- Improved the accuracy of the conversational **NL2SQL** system by **1.5%** on the **Spider** NL2SQL dataset.
- Prototyped alternative model architectures to overcome the 512 token length limitation in existing models.

Machine Learning 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 queuing infrastructure using **AMQP** and **RabbitMQ** to handle upto 300,000 requests each second.

Robotics Researcher, RVL Lab   Sep. 2020 – Apr. 2021
Robot Vision and Learning Lab, University of Toronto   *Toronto, ON*
- Improved autonomous driving performance in mobile robots via novel data augmentation techniques.
- Responsibilities: data collection, performing simulation experiments, designing/debugging the model architecture.
- Performed real robot experiments with a Husky robot; including sensor setup and **ROS** Node configuration.

Computer Vision Engineer, 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.

EDUCATION

Mila & University of Montréal (Currently Enrolled)
M.Sc, Computer Science (Artificial Intelligence and Robotics)   *Sep. 2021 – Feb. 2024 (Graduation Date Flexible)*
- **Supervisor:** Prof. Liam Paull, director of the Montreal Robotics and Embodied AI Lab, Core Mila Member, CIFAR AI Chair.

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)
- **Teaching Assistant:** Mobile Robotics (CSC477), Data Structures (CSC263), Theory of Computation (CSC236).

TECHNICAL SKILLS

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