

# Ali Kuwajerwala

M.Sc. Candidate, Mila & University of Montréal

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**AI and robotics researcher with a strong background in deep learning, mobile robotics, and multimodal foundation models. Seeking technical research and engineering roles.**

## 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*. 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**  
*M.Sc., Computer Science (Robotics and Artificial Intelligence)* Sep. 2021 – Aug. 2024
  - 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