Alihusein Kuwajerwala

Computer Systems Professional

Contact Email: ali.hqk@gmail.com

Seeking roles focused on analyzing, designing, and optimizing computer systems to improve data workflows and ensure seamless integration in robotics and AI environments.

Selected Publications

- **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 **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. **ICRA 2022** Sharma, D., Kuwajerwala, A., Shkurti, F., Augmenting Imitation Experience via Equivariant
 - Representations.

Experience

Robotics Researcher, **REAL Lab**

Montreal Robotics and Embodied AI Lab, University of Montreal

- Analyzed and optimized system architecture for open-vocabulary 3D scene graph construction, improving data processing workflows to efficiently handle large-scale multi-view image data and semantic associations.
- Integrated vision and language model outputs into a structured 3D representation, designing data flows and performing system configuration to support seamless inter-object relationships and query-based information retrieval.

Internship, Amazon

Alexa AI Team, Amazon Devices

- Enhanced data flow and system scalability by analyzing existing constraints and proposing system improvements for natural language processing tasks.
- Prototyped alternative system architectures to overcome the 512 token length limitation in existing systems.

Machine Learning Engineer, Liquid Analytics (Startup)

Perform AI Application Team

- Analyzed and optimized computer systems for processing logistics data, ensuring system scalability and high performance
- Designed and optimized queuing and data processing systems to handle high-volume requests, ensuring reliability and supporting scalability.

Internship, EPSON

Machine Vision Team, Robotics Department, EPSON Canada

- Optimized data handling and evaluation systems for robotic applications, improving processing efficiency to support commercial robotics operations
- Enhanced evaluation systems to support increased throughput and data consistency, increasing (upto 5x) the amount of tasks run each day.

Education

University of Toronto (Mississauga Campus)

Honours Bachelor of Science CGPA: 3.63

- Major: Computer Science (Specialist) & Mathematical Sciences (Minor), conferred with high distinction.
- 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).

2022

2021

2023

(Toronto, ON)

(Montreal, QC)

(Remote)

2018 - 2019

(Markham, ON)

Sep. 2016 - June 2020