KARUSH SURI

GitHub ⋄ Google Scholar ⋄ LinkedIn ⋄ Twitter

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CURRENT WORK

Karush is a Research Engineer at Google X in Mountain View. He aims to create generalist agents capable of accelerating their own learning. These agents must reason about sequential patterns and structures.

EDUCATION

University of Toronto   2019 - 2021
Master of Applied Science (M.A.Sc)   *Toronto, Canada*

· Field: Computer Engineering
· Advisors: Dr. Kostas Plataniotis & Dr. Yuri Lawryshyn
· Thesis: Deep Hierarchical Reinforcement Learning (link) (slides)
· GPA: 4/4

Amity University   2015 - 2019
Bachelor of Technology (B.Tech)   *Delhi, India*

· Field: Electrical Engineering & Applied Mathematics
· Advisors: Dr. Rinki Gupta
· Thesis: Deep Learning & Game Theory for Wearable Sensors (link) (demo)
· GPA: 8.78/10 (Coursework Rank: 4/142, Thesis Rank: 1/1120)

SCHOLARSHIPS & AWARDS

Outstanding Reviewer, NeurIPS	*2023*
Electrical & Computer Engineering Fellowship, University of Toronto	*2020-2021*
Edward S. Rogers Graduate Scholarship, University of Toronto	*2019-2020*
Best in Technical Innovation Award, Amity University (class of 2015-2019)	*2019*
Most Frugal Innovation Award, Amity University	*2018*
100% Curriculum Merit Scholarship, Amity University	*2015*
Young Achievers Award	*2015*

PROFESSIONAL EXPERIENCE

Google X   2021 - 2023
AI Resident → Research Engineer   *Mountain View, USA*

· Advisors: Grace Brentano, Dr. Lam Nguyen & Dr. Rishabh Singh
· Project: Undisclosed

Borealis AI   2019 - 2021
Student Researcher   *Toronto, Canada*

· Advisors: Xiao Qi Shi, Dr. Yuri Lawryshyn & Dr. Kostas Plataniotis
· Project: Deep Hierarchical Reinforcement Learning for Trade Execution

Signal Processing Lab, Amity University   2017 - 2019
Undergraduate Research Assistant- Deep Learning   *Delhi, India*

· Advisor: Dr. Rinki Gupta
· Project: Deep Learning & Game Theory for Wearable Sensors (demo)

INTERNSHIP EXPERIENCE

Airtel 2018
Summer Engineering Intern *Delhi, India*
· Project: Network Communication Interfaces.
· Description: Implemented communication interfaces between 4G network cards.

Reliance Jio 2017
Summer Engineering Intern *Mumbai, India*
· Project: Excel Data Processing Automator.
· Description: Implemented an excel data processing automator for cell-to-cell data logging.

Sony 2016
Summer Engineering Intern *Delhi, India*
· Project: LCD Television Systems and BRAVIA Engine Applications.
· Description: Studied and researched BRAVIA's video processing pipeline.

PUBLICATIONS

· *"Surprise Minimizing Multi-Agent Learning with Energy-based Models"*
Karush Suri, Xiao Qi Shi, Konstantinos Plataniotis, Yuri Lawryshyn   NeurIPS 2022
(paper) (webpage) (code) (talk) (reviews)

· *"Off-Policy Evolutionary Reinforcement Learning with Maximum Mutations"*
Karush Suri   AAMAS 2022 **(oral)**
(paper) (webpage) (code) (blog) (talk) (reviews)

· *"Continuous Sign Language Recognition from Wearable IMUs using Deep CapsNet and Game Theory"*
Karush Suri, Rinki Gupta   Computers And Electrical Engineering, Elsevier, Vol. 78, 2019
(paper) (code) (demo) (reviews)

· *"Transfer Learning for sEMG-based Hand Gestures using Deep Learning in a Master- Slave Architecture"*
Karush Suri, Rinki Gupta   IEEE IC3I 2018
(paper)

PENDING PATENTS

· *"Large Language Model Derived Environment State Changes In Supply Chain Logistics"*   2023
Lam Nguyen, Grace Brentano, Salil Pradhan, David Andre, Gearoid Murphy, Sze Lee, Karush Suri, Raja Panjwani, Anikait Singh, Klara Kaleb
Google X, Application Number: 52750.

· *"Large Language Model Interface for Supply Chain Networks"*   2023
Lam Nguyen, Grace Brentano, David Andre, Salil Pradhan, Anikait Singh, Karush Suri
Google X, Application Number: 52503.

· *"Generating Network Alignment Information"*   2022
Raja Panjwani, Anikait Singh, Ashish Chona, Sze Lee, Grace Brentano, Karush Suri, Lam Nguyen, Salil Pradhan
Google X, Application Number: 52766.

INVITED TALKS & TUTORIALS

· *Off-Policy Deep Reinforcement Learning*, Google X Tech Forum   2023
· *Facial Emotion Recognition: A Tutorial*, University of Toronto   2021
· *Deep Hierarchical Reinforcement Learning*, Borealis AI   2020
· *Cooperation in Multi-Agent Reinforcement Learning*, University of Toronto   2020
· *Capsule Networks for Gesture Recognition*, Amity University   2019

TEACHING ASSISTANTSHIPS

· ECE1512H *Digital Image Processing*, University of Toronto   (Winter 2021)
· CSC104H *Computational Thinking*, University of Toronto   (Winter 2021)
· CSC2209H *Computer Networks*, University of Toronto   (Fall 2020)
· CSC258H *Computer Organization*, University of Toronto   (Winter 2020)

ORGANIZATIONAL WORK & SERVICES

· Reviewer, *ICML*   2024
· Reviewer, *ICLR*   2024
· Reviewer, *NeurIPS*   2023
· Stage Committee Head, 6th *IEEE SPIN*   2019
· Coordinating Committee, 5th *IEEE SPIN*   2018
· Volunteering Committee, 4th *IEEE SPIN*   2017

TECHNICAL SKILLS

· **Languages-** Python, Lua, HTML, Markdown, MATLAB, LaTeX, C++.
· **Frameworks-** JAX, PyTorch, Tensorflow, acme, haiku, rlax, jraph, flax, DGL, torch7, Gym, Flask.
· **Data Utilities-** Json, Protocol Buffers, csv, pandas, numpy, tf datasets, jax iterators.
· **Platforms-** Git, Docker, Amazon Web Services, Google Cloud Platform.

REFERENCES

· Lam Nguyen, Senior Research Scientist, Google X   2023
· Grace Brentano, Senior Software Engineer, Google X   2023
· Kostas Plataniotis, Professor, University of Toronto   2021
· Yuri Lawryshyn, Professor, University of Toronto   2021
· Xiao Qi Shi, Machine Learning Researcher, Borealis AI   2020