

# KARUSH SURI

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## VISA STATUS

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Canada: Permanent Resident  
India: Citizen

## EDUCATION

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**University of Toronto** 2019-2021  
*M.A.Sc, Electrical & Computer Engineering* Toronto, Canada  
Advisors: Dr. Kostas Plataniotis & Dr. Yuri Lawryshyn  
Thesis: Deep Hierarchical Reinforcement Learning ([link](#))  
GPA: 4/4

**Amity University** 2015-2019  
*B.Tech, Electrical & Computer Engineering* Delhi, India  
Advisors: Dr. Rinki Gupta  
Thesis: Sign Language Translation from Wearable Sensors ([link](#)) ([demo](#))  
GPA: 8.78/10 (Coursework Rank: 4/142, Thesis Rank: 1/1120)

## SCHOLARSHIPS & AWARDS

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**Academic**  
Electrical & Computer Engineering Fellowship, University of Toronto 2020-2021  
Edward S. Rogers Graduate Scholarship, University of Toronto 2019-2020  
Best in Technical Innovation Award- Class of 2015-2019, Amity University (1/1120) 2019  
Most Frugal Innovation Award, Amity University 2018  
100% Curriculum Merit Scholarship, Amity University 2015  
Young Achievers in Mathematics Award 2015

### Industrial

Outstanding Reviewer, NeurIPS 2023  
Outstanding Intern Buddy, Google X 2022

## PROFESSIONAL EXPERIENCE

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**Valence Labs (Mila)** 2023 - Present (1 year)  
*Senior Research Engineer* Montreal, Canada  
Advisors: Dr. Dominique Beaini, Dr. Emmanuel Bengio  
Projects: **(1)** Multi-Modal Phenomic Foundational Models, **(2)** Amortized Inference with GFlowNets

**Google X** 2021 - 2023 (2 years)  
*AI Resident → Research Engineer* Mountain View, USA  
Advisors: Grace Brentano, Dr. Lam Nguyen & Dr. Rishabh Singh  
Project: Undisclosed ([demo](#))

## INTERNSHIP EXPERIENCE

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**Borealis AI** 2019 - 2021 (2 years)  
*Student Researcher* Toronto, Canada  
Project: Deep Hierarchical Reinforcement Learning

<b>Signal Processing Lab, Amity University</b> <i>Undergraduate Research Assistant - Deep Learning</i> Project: Sign Language Translation from Wearable Sensors ( <a href="#">demo</a> )	2019 - 2021 (2 years) <i>Delhi, India</i>
<b>Airtel</b> <i>Summer Engineering Intern</i> Project: Network Communication Interfaces	2018 (3 months) <i>Delhi, India</i>
<b>Reliance Jio</b> <i>Summer Engineering Intern</i> Project: Excel Data Processing Automator	2017 (3 months) <i>Mumbai, India</i>
<b>Sony</b> <i>Summer Engineering Intern</i> Project: BRAVIA Engine for LCD Systems	2017 (2 months) <i>Delhi, India</i>

## PUBLICATIONS

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\* = Equal Contribution

<i>"Amortizing Multi-Task Molecular Inference with Task-Conditioned GFlowNets"</i> <a href="#">Karush Suri</a> , Emmanuel Bengio, Dominique Beaini	Under Review
<i>"Understanding Conditional Computation in Contrastive Phenomic Retrieval"</i> <a href="#">Karush Suri</a> , Puria Azadi Moghadam, Frederik Wenkel, Maciej Sypetkowski, Emmanuel Bengio, Emmanuel Noutahi, Dominique Beaini ( <a href="#">paper</a> ) ( <a href="#">code</a> )	Under Review
<i>"How Molecules Impact Cells: Unlocking Contrastive PhenoMolecular Retrieval"</i> Philip Fradkin*, Puria Moghadam*, <a href="#">Karush Suri</a> , Frederik Wenkel, Ali Bashashati, Maciej Sypetkowski, Dominique Beaini ( <a href="#">paper</a> ) ( <a href="#">reviews</a> )	NeurIPS 2024 FM4S @ NeurIPS 2024 ( <b>oral</b> ) <b>(best paper award)</b>
<i>"On the Scalability of GNNs for Molecular Graphs"</i> Maciej Sypetkowski, Frederik Wenkel, Farimah Poursafaei, Nia Dickson, <a href="#">Karush Suri</a> , Philip Fradkin, Dominique Beaini ( <a href="#">paper</a> ) ( <a href="#">code</a> ) ( <a href="#">blog</a> ) ( <a href="#">paper</a> ) ( <a href="#">reviews</a> )	NeurIPS 2024
<i>"Surprise Minimizing Multi-Agent Learning with Energy-based Models"</i> <a href="#">Karush Suri</a> , Xiao Qi Shi, Konstantinos Plataniotis, Yuri Lawryshyn ( <a href="#">paper</a> ) ( <a href="#">webpage</a> ) ( <a href="#">code</a> ) ( <a href="#">talk</a> ) ( <a href="#">reviews</a> )	NeurIPS 2022
<i>"Off-Policy Evolutionary Reinforcement Learning with Maximum Mutations"</i> <a href="#">Karush Suri</a> ( <a href="#">paper</a> ) ( <a href="#">webpage</a> ) ( <a href="#">code</a> ) ( <a href="#">talk</a> ) ( <a href="#">reviews</a> )	AAMAS 2022 ( <b>oral</b> )
<i>"Continuous Sign Language Recognition from Wearable IMUs using Deep CapsNet and Game Theory"</i> <a href="#">Karush Suri</a> , Rinki Gupta ( <a href="#">paper</a> ) ( <a href="#">code</a> ) ( <a href="#">demo</a> ) ( <a href="#">reviews</a> )	CEE, Elsevier, 2019
<i>"Transfer Learning for sEMG-based Hand Gestures using Deep Learning in a Master-Slave Architecture"</i> <a href="#">Karush Suri</a> , Rinki Gupta ( <a href="#">paper</a> )	IEEE IC3I 2018

## PENDING PATENTS

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“ <i>Generating Actions for a Supply Chain Network</i> ”	2024
Lam Nguyen, Grace Brentano, Sze Lee, <a href="#">Karush Suri</a> , Anikait Singh, Salil Pradhan, David Andre Google X, Application Number: 52862.	
“ <i>Large Language Model Derived Environment State Changes In Supply Chain Logistics</i> ”	2023
Lam Nguyen, Grace Brentano, Salil Pradhan, David Andre, Gearoid Murphy, Sze Lee, <a href="#">Karush Suri</a> , Raja Panjwani, Anikait Singh, Klara Kaleb Google X, Application Number: 52750.	
“ <i>Large Language Model Interface for Supply Chain Networks</i> ”	2023
Lam Nguyen, Grace Brentano, David Andre, Salil Pradhan, Anikait Singh, <a href="#">Karush Suri</a> Google X, Application Number: 52503.	
“ <i>Generating Network Alignment Information</i> ”	2022
Raja Panjwani, Anikait Singh, Ashish Chona, Sze Lee, Grace Brentano, <a href="#">Karush Suri</a> , Lam Nguyen, Salil Pradhan Google X, Application Number: 52766.	

## INVITED TALKS & TUTORIALS

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<i>Mixtures of Experts as Diversity-Inducing Bottlenecks</i> , Valence Labs	2024
<i>Off-Policy Deep Reinforcement Learning</i> , Google X Tech Forum	2023
<i>Facial Emotion Recognition: A Tutorial</i> , University of Toronto	2021
<i>Deep Hierarchical Reinforcement Learning</i> , Borealis AI	2020
<i>Cooperation in Multi-Agent Reinforcement Learning</i> , University of Toronto	2020
<i>Capsule Networks for Gesture Recognition</i> , Amity University	2019

## ORGANIZATIONAL WORK & SERVICES

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Reviewer, <i>ICML</i>	2024-Present
Reviewer, <i>ICLR</i>	2024-Present
Reviewer, <i>NeurIPS</i>	2023
Teaching Assistant, <i>Digital Image Processing</i> , University of Toronto	2021
Teaching Assistant, <i>Computational Thinking</i> , University of Toronto	2021
Teaching Assistant, <i>Computer Networks</i> , University of Toronto	2020
Teaching Assistant, <i>Computer Organization</i> , University of Toronto	2020
Stage Committee Head, 6 <sup>th</sup> <i>IEEE SPIN</i>	2019
Coordinating Committee, 5 <sup>th</sup> <i>IEEE SPIN</i>	2018
Volunteering Committee, 4 <sup>th</sup> <i>IEEE SPIN</i>	2017

## TECHNICAL SKILLS

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**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.