

# Prakhar Ganesh

COMPUTER SCIENCE · PHD STUDENT

McGill University | Quebec AI Institute (Mila)

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Research Interests: I am interested in the challenges that arise in AI when moving from the sandbox to the real world, primarily at the intersection of multiplicity, fairness, privacy, and security, focusing on uncovering the learning dynamics of neural networks.

## Education

### McGill University | Quebec AI Institute (Mila)

PHD COMPUTER SCIENCE (THESIS) | ADVISOR: PROF GOLNOOSH FARNADI

Jan 2024 - Present

### National University of Singapore (NUS)

MASTER OF COMPUTING (AI SPECIALISATION) | ADVISOR: PROF REZA SHOKRI

Aug 2021 - Mar 2023

### Indian Institute of Technology Delhi (IITD)

BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE AND ENGINEERING

Aug 2015 - May 2019

## Work Experience

NATIONAL UNIVERSITY OF SINGAPORE (NUS) | RESEARCH INTERN

Jan 2023 - Apr 2023

ALVISUAL | AI ENGINEER (INTERN)

Jan 2022 - Mar 2022

ADVANCED DIGITAL SCIENCES CENTER (ADSC) | RESEARCH ENGINEER

Jun 2019 - July 2021

KRIDA.AI | ENGINEER (INTERN)

Jan 2019 - May 2019

WEALTHNET ADVISORS | ANALYST (INTERN)

May 2018 - July 2018

## Publications

### Different Horses for Different Courses: Comparing Bias Mitigation Algorithms in ML

[SPOTLIGHT PRESENTATION] WORKSHOP ON ALGORITHMIC FAIRNESS THROUGH THE LENS OF METRICS AND EVALUATION, NEURIPS 2024

Prakhar Ganesh, Usman Gohar, Lu Cheng, Golnoosh Farnadi

### Towards More Realistic Extraction Attacks: An Adversarial Perspective

[NON-ARCHIVAL] WORKSHOP ON PRIVACY IN NATURAL LANGUAGE PROCESSING, ACL 2024

Yash More, Prakhar Ganesh, Golnoosh Farnadi

### The Data Minimization Principle in Machine Learning

[NON-ARCHIVAL] WORKSHOP ON GENERATIVE AI + LAW, ICML 2024; WORKSHOP ON REGULATABLE ML, NEURIPS 2024

Prakhar Ganesh, Cuong Tran, Reza Shokri, Ferdinando Fioretto

### An Empirical Investigation into Benchmarking Model Multiplicity for Trustworthy Machine Learning: A Case Study on Image Classification

IEEE/CVF WINTER CONFERENCE ON APPLICATIONS OF COMPUTER VISION (WACV), 2024

Prakhar Ganesh

### On The Impact of Machine Learning Randomness on Group Fairness

[BEST PAPER AWARD] ACM CONFERENCE ON FAIRNESS, ACCOUNTABILITY AND TRANSPARENCY (FACCT), 2023

Prakhar Ganesh, Hongyan Chang, Martin Strobel, Reza Shokri

### YOLO-ReT: Towards High Accuracy Real-time Object Detection on Edge GPUs

IEEE/CVF WINTER CONFERENCE ON APPLICATIONS OF COMPUTER VISION (WACV), 2022

Prakhar Ganesh, Yao Chen, Yin Yang, Deming Chen, Marianne Winslett

### HiKonv: High Throughput Quantized Convolution With Novel Bit-wise Management and Computation

ASIA AND SOUTH PACIFIC DESIGN AUTOMATION CONFERENCE (ASP-DAC), 2022

Yao Chen, Xinheng Liu, Prakhar Ganesh, Junhao Pan, Jinjun Xiong, Deming Chen

### Compressing Large-Scale Transformer-Based Models: A Case Study on BERT

TRANSACTIONS OF THE ASSOCIATION FOR COMPUTATIONAL LINGUISTICS (TACL), 2021

Prakhar Ganesh, Yao Chen, Xin Lou, Mohd. Ali Khan, Yin Yang, Hassan Sajjad, Preslav Nakov, Deming Chen, Marianne Winslett

### Learning-based Detection and Characterization of Time Delay Attack in Cyber-Physical Systems

IEEE TRANSACTIONS ON SMART GRID (TSG), 2021

Prakhar Ganesh, Xin Lou, Yao Chen, Rui Tan, David K.Y. Yau, Deming Chen, Marianne Winslett

Invited Talks

- Oct 2024 **Responsible AI Week, Quebec AI Institute (Mila)**, The Curious Case of Arbitrariness in Machine Learning
- Jan 2024 **Saarland University**, On The Impact of Machine Learning Randomness on Model Fairness
- May 2023 **Quebec AI Institute (Mila)**, On The Impact of Machine Learning Randomness on Model Fairness

Awards and Scholarships

- 2024 **Travel Grant**, IAPP Privacy Security Risk (PSR) - Student Scholar program
- 2024 **Travel Grant**, AAAI/ACM Conference on AI, Ethics, and Society (AIES) - Student Program
- 2024 **Travel Grant**, ACM Conference on Fairness, Accountability and Transparency (FACCT) - Doctoral Consortium
- 2024 **Doctoral Research Scholarship**, Fonds de recherche du Québec – Nature et Technologies (FRQNT)
- 2024 **Graduate Research Enhancement And Travel (GREAT) Award**, McGill University
- 2024 **Excellence Scholarship - EDI in Research Category**, Mila EDI Scholarship Program
- 2024 **Graduate Excellence Award**, McGill University
- 2023 **Graduate Scholarship**, Prof. Golnoosh Farnadi, Quebec AI Institute (Mila)
- 2023 **Best Paper Award**, ACM Conference on Fairness, Accountability and Transparency (FACCT)
- 2023 **Travel Grant**, ACM Conference on Fairness, Accountability and Transparency (FACCT)
- 2022 **Winner**, 8-Bit Bias Bounty Competition - Supervised Learning Track

Teaching and Mentorship Experience

- 2024 **Teaching Assistant**, Fall-COMP-370: Introduction to Data Science, McGill University
- 2024 **Instructor**, Indigenous Pathfinders in AI
- 2024 **Teaching Assistant**, AI4Good Lab: Summer ML Bootcamp
- 2024 **Coding Mentor**, Girls Who Code Hackathon
- 2024 **Teaching Assistant**, Winter-COMP-553: Algorithmic Game Theory, McGill University

Professional and Volunteer Service

PEER REVIEWER	INTERNATIONAL CONFERENCE ON ARTIFICIAL INTELLIGENCE AND STATISTICS (AISTATS)	2025
PEER REVIEWER	INTERNATIONAL CONFERENCE ON LEARNING REPRESENTATIONS (ICLR)	2025
PEER REVIEWER	WINTER CONFERENCE ON APPLICATION OF COMPUTER VISION (WACV)	2025, 2024, 2022, 2021
PEER REVIEWER, ETHICS REVIEWER	NEURAL INFORMATION PROCESSING SYSTEMS (NEURIPS)	2024
VOLUNTEER, PEER REVIEWER	ACM CONFERENCE ON FAIRNESS, ACCOUNTABILITY AND TRANSPARENCY (FACCT)	2024
PEER REVIEWER, ETHICS REVIEWER	ACL ROLLING REVIEWS (ARR)	Feb and July, 2024
PEER REVIEWER	ALGORITHMIC FAIRNESS THROUGH THE LENS OF METRICS AND EVALUATION (AFME) WORKSHOP, NEURIPS	2024
PEER REVIEWER	RESPONSIBLE GENERATIVE AI WORKSHOP, CVPR	2024
ETHICS REVIEWER	NEURAL INFORMATION PROCESSING SYSTEMS (NEURIPS)	2023
PEER REVIEWER	ALGORITHMIC FAIRNESS THROUGH THE LENS OF TIME (AFT) WORKSHOP, NEURIPS	2023
PEER REVIEWER	AAAI CONFERENCE ON ARTIFICIAL INTELLIGENCE (AAAI)	2021

Preprints/Manuscripts

Free Lunch for Co-Saliency Detection: Context Adjustment

ARXIV PREPRINT ARXIV:2108.02093

Lingdong Kong, **Prakhar Ganesh**, Tan Wang, Junhao Liu, Le Zhang, Yao Chen

Restructuring Conversations using Discourse Relations for Zero-shot Abstractive Dialogue Summarization

ARXIV PREPRINT ARXIV:1902.01615

**Prakhar Ganesh**, Saket Dingliwal

VLSTM: Very Long Short-Term Memory Networks for High-Frequency Trading

ARXIV PREPRINT ARXIV:1809.01506

**Prakhar Ganesh**, Puneet Rakheja

Nucl2Vec: Local alignment of DNA sequences using Distributed Vector Representation

BIORXIV PREPRINT DOI:10.1101/401851

**Prakhar Ganesh**, Gaurav Gupta, Shubhi Saini, Kolin Paul