# Mohammed Adnan

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## ▬▬ EDUCATION

**Vector Institute/University of Calgary**      **Toronto, Canada**
*Ph.D. student*      *Jan 2023 - present*
Advisors: Dr. Yani Ioannou & Dr. Rahul G. Krishnan.

**University of Waterloo**      **Waterloo, Canada**
*MASc in Machine Learning & Vision, GPA: 4.0/4.0*      *Graduated: August 2021*
Thesis: Set Representation Learning: A Framework for Learning.
Gigapixel Images

**Indian Institute of Technology Guwahati**      **Guwahati, India**
*B.Tech in Electronics & Electrical Engineering*      *Graduated: June 2019*
Thesis: Super Resolution of Facial Images

## ▬▬ EXPERIENCE

**Roche**      **Toronto, Canada**
*ML Research Intern*      *July 2023 - Jan 2024*
- Working on pruning and compression.

**Borealis AI**      **Toronto, Canada**
*ML Research Intern*      *Sept 2022 - Jan 2023*
- Worked on data augmentation for Temporal Point Processes.
- Advisor: Fred Tung & Gabriel Oliveira

**Vector Institute/University of Guelph**      **Toronto, Canada**
*Research Associate*      *Sept 2021 - Aug 2022*
- Working on domain-agnostic self-supervised learning and continual learning
- Advisor: Dr. Graham Taylor

**University of Waterloo**      **Waterloo, Canada**
*Graduate Research Assistant*      *Sept 2019 - August 2021*
- Worked on Differentially Private Federated Learning for Medical Imaging.
- Proposed a new algorithm for learning Permutation Invariant Representations.
- Proposed new framework for Multiple Instance Learning using Graph Neural Networks.
- Proposed a new hierarchical learning framework for Multiple Instance Learning.
- Published in ECCV 2020, CVPR(W) 2020, & MICCAI 2021

**Waterloo AI Institute**      **Waterloo, Canada**
*Shastri Indo-Canadian Research Fellow*      *May 2018 – July 2018*
- Awarded fellowship by Govt. of India and Canada to do research at Waterloo AI Institute.
- Worked on One-Shot Content Based Image Retrieval for histopathology images.
- Designed GUI based image retrieval system for computer aided diagnosis.

**National University of Singapore & Singapore Health**      **Singapore**
*Visiting Researcher*      *May 2017 – July 2017*
- Worked on a joint project between National University of Singapore and SingHealth to study the effect of topography on liver and dental cells using machine learning algorithms.
- Worked in a multidisciplinary team consisting of medical doctors, biologists and engineers.
- Developed Image processing algorithms for prepossessing high resolution cytometry images.
- Implemented machine learning algorithms for analyzing high resolution cytometry images..

## PUBLICATIONS

1. Monitoring Shortcut Learning using Mutual Information
   *Mohammed Adnan*, Yani A. Ioannou, Kenyon Tsai, Angus Galloway, HR Tizhoosh, Graham Taylor, **ICML 2022 Workshop on Spurious Correlations, Invariance and Stability**
2. Federated Learning and Differential Privacy for Medical Image Analysis
   *Mohammed Adnan*, Shivam Kalra, Jesse C. Cresswell, Graham W. Taylor, Hamid Tizhoosh, **Nature Scientific Reports**
3. Differentially Private Federated Learning for Medical Image Analysis
   *Mohammed Adnan*, Jesse C. Cresswell, Shivam Kalra, Graham W. Taylor, Hamid Tizhoosh, **AAAI 2022 Trustworthy AI for Healthcare Workshop**
4. Domain-Agnostic Clustering with Self-Distillation
   *Mohammed Adnan*, Yani A. Ioannou, Kenyon Tsai, Graham Taylor, **NeurIPS 2021 Workshop on Self-Supervised Learning - Theory and Practice**
5. Pay Attention with Focus: A Novel Learning Scheme for Classification of Whole Slide Images:
   Shivam Kalra, *Mohammed Adnan*, Sobhan Hemati, Taher Dehkharghanian, Shahryar Rahnamayan, Hamid Tizhoosh, **MICCAI 2021**
6. Learning Permutation Invariant Representation using Memory Network
   Shivam Kalra*, *Mohammed Adnan**, Graham Taylor, Hamid Tizhoosh, **ECCV 2020**
7. Representation Learning of Histopathology Images using Graph Neural Networks
   *Mohammed Adnan**, Shivam Kalra*, Graham Taylor, Hamid Tizhoosh, **CVPR(W) 2020**.
8. A Materiomics Approach to Pulp Regeneration
   Pei Fang, Aliz Kunstar, Apoorva Shivankar, *Mohammed Adnan*, Hemant Unadkat, **American Association of Endodontists (AAE) Conference, 2018**.
9. A novel topographical driven bioactive membrane for guided tissue regeneration
   Aliz Kunstar, Apoorva Shivankar, *Mohammed Adnan*, Hemant Unadkat, **SingHealth Duke-NUS Scientific Congress 2018**.

## AWARDS

1. **Shastri Indo-Canadian Research Fellowship 2018 (MITACS)**
   Among 5 students to be awarded Shastri Indo Canadian Research Fellowship 2018
2. **Vector Institute Scholarship in AI 2019**
   Awarded merit-based scholarship by Vector Institute, Canada
3. **University of Waterloo Graduate Scholarship 2020**
   Awarded scholarship for excellence in academics
4. **University of Waterloo Graduate Scholarship 2021**
   Awarded scholarship for excellence in academics
5. **Alberta Graduate Excellence Scholarship 2023**
   Awarded scholarship for excellence during Ph.D.

## ADDITIONAL

- **Reviewer**: ICLR 2022, UAI 2022, NeurIPS 2022, CVPR 2023, NeurIPS 20203, UAI 2023, ICLR 2023, Transactions on Medical Imaging.
- **Programming Languages**: Python, C, C++, Verilog, MATLAB.
- **Deep Learning Frameworks**: TensorFlow, PyTorch, JAX.

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* denotes equal contributions