

Mohammed Adnan

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EDUCATION

Vector Institute/University of Calgary

Ph.D. student

Advisors: Dr. Yani Ioannou & Dr. Rahul G. Krishnan.

Toronto, Canada

Jan 2023 - present

University of Waterloo

MASc in Machine Learning & Vision, GPA: 4.0/4.0

Thesis: Set Representation Learning: A Framework for Learning.

Gigapixel Images

Waterloo, Canada

Graduated: August 2021

Indian Institute of Technology Guwahati

B.Tech in Electronics & Electrical Engineering

Thesis: Super Resolution of Facial Images

Guwahati, India

Graduated: June 2019

EXPERIENCE

Borealis AI

ML Research Intern

- Working on data-augmentation for Temporal Point Processes.
- Advisor: Fred Tung & Gabriel Oliveira

Toronto, Canada

Sept 2022 - Jan 2023

Vector Institute/University of Guelph

Research Associate

- Working on domain-agnostic self-supervised learning and continual learning
- Advisor: Dr. Graham Taylor

Toronto, Canada

Sept 2021 - Aug 2022

University of Waterloo

Graduate Research Assistant

- 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, Canada

Sept 2019 - August 2021

Waterloo AI Institute

Shastri Indo-Canadian Research Fellow

- 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.

Waterloo, Canada

May 2018 - July 2018

National University of Singapore & Singapore Health

Visiting Researcher

- 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 preprocessing high resolution cytometry images.
- Implemented machine learning algorithms for analyzing high resolution cytometry images..

Singapore

May 2017 - July 2017

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 2020, UAI 2023, ICLR 2023, Transactions on Medical Imaging.
- **Programming Languages:** Python, C, C++, Verilog, MATLAB.
- **Deep Learning Frameworks:** TensorFlow, PyTorch, JAX.

* denotes equal contributions