Mohammed Adnan

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adnan1306.github.io/

EDUCATION

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

Vector Institute/University of Guelph — **Toronto, Canada**
Research Associate — *Sept 2021 - Present*
- 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. Federated Learning and Differential Privacy for Medical Image Analysis
   Mohammed Adnan, Shivam Kalra, Jesse C. Cresswell, Graham W. Taylor, Hamid Tizhoosh, *under review in* **Nature Scientific Reports**
2. Differentially Private Federated Learning for Medical Image Analysis
   Mohammed Adnan, Jesse C. Cresswell, Shivam Kalra, Graham W. Taylor, Hamid Tizhoosh, *under review in* **AAAI 2022 Workshop**
3. 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**

4. 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**
5. Learning Permutation Invariant Representation using Memory Network
   Shivam Kalra*, *Mohammed Adnan**, Graham Taylor, Hamid Tizhoosh, **ECCV 2020**
6. Representation Learning of Histopathology Images using Graph Neural Networks
   *Mohammed Adnan**, Shivam Kalra*, Graham Taylor, Hamid Tizhoosh, **CVPR(W) 2020**.
7. A Materiomics Approach to Pulp Regeneration
   Pei Fang, Aliz Kunstar, Apoorva Shivankar, *Mohammed Adnan*, Hemant Unadkat, **American Association of Endodontists (AAE) Conference, 2018**.
8. A novel topographical driven bioactive membrane for guided tissue regeneration
   Aliz Kunstar,Apoorva Shivankar, *Mohammed Adnan*, Hemant Unadkat, **SingHealth Duke-NUS Scientific Congress 2018**.

Ongoing works:

1. Avoiding shortcuts for domain-agnostic self-supervised learning; with Yani Ioannou, Kenyon Tsai and Graham Taylor.
2. Leveraging sparse neural networks for continual learning; with Yani Ioannou and Graham Taylor.

AWARDS

1. **Shastri Indo-Canadian Research Fellowship 2018**
   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

ADDITIONAL

- **Reviewer**: ICLR 2022
- **Programming Languages**: Python, C, C++, Verilog, MATLAB
- **Deep Learning Frameworks**: TensorFlow, PyTorch, Pyro, PyTorch Geometric

* denotes equal contributions