NOUR ABDELMONEIM

na2247@nyu.edu   Website: NourAbdelmoneim.github.io   GitHub: NourAbdelmoneim

EDUCATION

New York University Abu Dhabi   August 2018 — May 2022

Bachelor of Science in Computer Science (Honors Graduate, Cum Laude), GPA: 3.92, Founders' Day Award

Capstone: Adversarial machine learning for protecting sensitive information from probing AI

Minor: Sound and Music Computing

Relevant Coursework: Applied Machine Learning; Directed Study: Adversarial Machine Learning; Natural Language Processing; Data Analysis; Music, the Mind and Artificial Intelligence; Introduction to Musical Programming

RESEARCH

Research Assistant   February 2024 — Present

Professor Keith Ross, New York University Abu Dhabi (NYUAD)

- Developing diffusion-based generative deep learning models for controllable music source separation
- Exploring reinforcement learning for online symbolic music improvisation and accompaniment

Research Collaborator   August 2024 — Present

Professor Mohammad R. K. Mofrad , University of California, Berkeley

- Co-authoring a review paper on Physics-Informed Neural Networks (PINNs) for cardiovascular disease, summarizing the latest advancements and identifying future research directions

Research Assistant   August 2022 — January 2024

Professor Katepalli Sreenivasan and Dr. Dimitra Atri, Center for Astrophysics and Space Science, NYUAD

- Led a project employing an interpretable neural network to model humidity on Mars, resulting in a first-author publication
- Implemented LSTM and transformer models for time-series climate forecasting using TensorFlow and PyTorch
- Conducted in-depth research on explainable AI techniques and shared detailed insights to support team's research

Thesis Research and Post-Graduation Practical Training   September 2021 — July 2022

Professor Talal Rahwan, Data Science and AI Lab, Computer Science Department, NYUAD

- Researched privacy-invading AI algorithms with a team of 4, focusing on identifying methods for preserving individual privacy.
- Developed and assessed adversarial attacks including the FGSM and one-pixel attack, targeting privacy invading ML models

Machine Learning Research Intern   May 2021 — August 2021

Dr. Prashanth Marpu, Space Program, Group 42

- Led a project to develop image-to-audio conversion using audio processing and object detection models for conveying semantic information from images through sound using TensorFlow
- Implemented statistical change detection methods (IRMAD) from scratch using canonical correlation analysis
- Trained and tested machine learning change detection algorithms on satellite imagery using PyTorch

Machine Learning and Computational Analysis Undergraduate Research Assistant   January 2020 — April 2021

Professor Carlos Guedes, Music and Sound Cultures Research Group, NYUAD

- Developed music information retrieval and machine learning scripts for the computational analysis of music from the South Indian region to cluster, classify, and predict beat patterns

PUBLICATIONS

- Abdelmoneim, N., Dhuri, D. B., Atri, D., & Martínez, G. (2024). Expanding Mars's Climate Modeling: Interpretable Machine Learning for Modeling Mars Science Laboratory Relative Humidity. The Planetary Science Journal, 5(4), 86.
- Atri, D., Abdelmoneim, N., Dhuri, D. B., & Simoni, M. (2023). Diurnal variation of the surface temperature of Mars with the Emirates Mars Mission: a comparison with Curiosity and Perseverance rover measurements. *Monthly Notices of the Royal Astronomical Society: Letters*, *518*(1), L1-L6.

INSTRUCTIONAL ROLES

Undergraduate Student Mentorship   August 2022 — February 2024

Mars Research Group, Center for Astrophysics and Space Science, NYUAD

- Mentored 4 undergraduate students, leading to their co-authorship on publications and presentations
- Guided students through hands-on training and provided continuous feedback and support

Volunteer Piano Instructor   June 2019 — Present

Alexandria, Egypt

- Volunteered during biannual visits to my home city to teach students in the community aged 5 to 14 beginner Piano
- Guided students from complete beginner levels to independent sheet music readers with a passion for music

Ice Skating Coach   September 2016 — March 2020

Emirates Skating Club, Abu Dhabi, UAE

- Obtained ISIAsia figure skating coaching certification by completing a coaching training program
- Coached intermediate and beginner level skaters from the ages of 4 to 18
- Successfully helped skaters of all ages pass internationally recognized ice skating exams

Computer Programming Teaching Assistant   September 2019 — December 2019

Engineering Department, New York University Abu Dhabi, UAE

- Guided 20 first-year university students through lab sessions with projects utilizing C++ and MATLAB
- Utilized different recourses to help students on a one-on-one basis during weekly office hours

EXTRACURRICULARS

Piano Student   June 2016 — Present

- Completed Trinity College London's Classical Piano exams up to the highest grade (Grade 8) with Honors
- Minored in Sound and Music Computing, taking a range of classes from music theory to algorithmic and AI composition
- Researched orientalist themes present in popular western classical music

Quantum Computing Hackathon for Social Good in the Arab World   March 2022

- Collaborated with a team of 7 to build a project that uses quantum computing to address a social issue in the Arab world
- Tackled the issue of rising mortality rates of delivery drivers in the UAE due to the pressure of prompt delivery by developing an application to optimize delivery time and order using quantum computing

Figure Skating   June 2014 — January 2022

- NYU Figure Skating Team member (during study-away semester in New York, Fall 2021)
- Passed internationally recognized exams through the International Ice Skating Institute Asia (ISIAsia)
- Participated in 18 events in 6 national level competitions earning several first-place medals
- Performed in 4 ice skating shows with my team, earning two first-place team awards

Dragon Boating Team Member   September 2019 — December 2020

- Joined NYUAD's dragon boating team and participated in weekly practice sessions
- Participated in 2 national level competitions with our team earning first place in one

SKILLS

Languages: Arabic, English, French (B2 level)

Machine Learning: TensorFlow, Keras, scikit-learn, openCV, PyTorch

Web Design and Development: HTML, CSS, MySQL, JavaScript/jQuery, Flask

Programming Languages/Libraries: Python, NumPy, Pandas, SciPy, Matplotlib, C++