Mohamed Elashri

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Education

University of Cincinnati — OH, US
Ph.D. in physics — 2020–Current
- Thesis: "Work in progress"

University of Minnesota Duluth — MN, US
M.S. in physics — 2018–2020
- Thesis: "Search for Slow Magnetic Monopoles with the NOvA Far Detector"

University of Science and Technology, Zewail City — Cairo, EG
B.S. in physics. — 2013–2018
- Thesis: "Strip Hit Resolution of CMS Tracker Analysis"

Research Experience

University of Science and Technology, Zewail City — Cairo, EG
Undergraduate Research Assistant — 2017–2018
- CMS Collaboration
- CMS Data analysis and Hardware training
- Worked on upgrading CMS tracker algorithm.

University of Minnesota, Duluth — MN, US
Graduate Research Assistant — 2018–2020
- NOνA Collaboration
- Worked on search for magnetic monopole in NOνA Far detector
- Exotics analyses group member
- Developed and maintained a general analysis package for exotics analyses

Teaching

University of Cincinnati — OH, US
Physics Teaching Assistant — 2018–2020
- Teach introductory physics labs and promote students linking between theoretical development and nature facts
- Helping conduct problem solving sessions and Physics tutoring center
- Grading assignments and tests, documenting results and informing lead teacher of students performance

University of Minnesota, Duluth — MN, US
Physics Teaching Assistant — 2018–2020
- Supported instructors with test administration, curriculum development, and assignment grading
- Encouraging dynamic and pleasant educational environment by promoting both gentle discipline and Physics
- Supported student learning objectives through personalized and small group assistance to support classroom instruction
- Graded assignments and tests using answer key, documented results and informed lead teacher of students' performance

Skills

- **Programming:** Python, Mathematica, C/C++, R,
- **Machine Learning:** PyTorch, TensorFlow, Keras
- **Particle Physics:** Pythia, Geant4, MadGraph, ART
- **Tools/Techs:** LaTeX, Git, Linux
- **Soft:** Leadership, Time management, Teamwork

Languages

- **English:** Proficient
- **Arabic:** Mother tongue, Native speaker

Projects

- **Analysis of Type Ia supernovae data** (Data Analysis, 2019)
  Revisiting Supernovae 1999 data and reproduce the results
- **NOvA experiment DDTPrescale calculation package** (C++, 2019)
  Calculate the average prescale per SubRub for the data acquired by nova experiment, used by various exotics analyses.
- **Analysis of Earthquake Time Series Data using Machine Learning** (Machine learning, 2019)
  Applying different ML algorithms on time series dataset and implementing the new linear neural differential method
- **Arxiv abstracts scraper python library** (Python, 2021)
  A python module for scraping arxiv abstracts for NLP testing purpose
- **Estimating the Age of universe using galaxies distance and velocity data** (Data Analysis, 2021)
  Calculating hubble constant and calculate age of universe using sklearn model from galaxies distances and velocities
- **Experimenting Machine Learning Techniques on SUSY dataset** (Machine Learning, 2021)
  Experimenting with real Monte-Carlo data to get accurate classification using various Machine Learning Algorithms
- **2d Ising Model Monte-Carlo Simulation** (Physics, 2021)
  Apply the MC methods using Metropolis Algorithm to Ising model and extract physical parameters.

Conferences AND Workshops

- **The 28th International Workshop on Weak Interactions and Neutrinos** (June, 2021)
  Assess the status of the field and to initiate collaborative efforts to address current physics questions
- **Beyond Standard Model: From Theory to Experiment (BSM- 2021)** (March, 2021)
  Discuss latest developments in the physics beyond the standard models of particle physics, cosmology and gravitation.
- **Fast Machine Learning for Science Workshop** (Oct, 2020)
  Discuss emerging methods and scientific applications for deep learning and inference acceleration applications in HEP.
- **Gravitational-Wave Open Data Workshop #3** (May, 2020)
  Intended for scientists and students who wish to learn about using gravitational-wave data and software.

Talks and Presentations

Physics Club Meeting, Zewail City (April –2016)
Talk: Parton Model

University of Science and Technology Seminar, Zewail City (Mar –2017)

Talk: Physics Program at Zewail City, Introduction for Prospective Students

Physics Club meeting, Zewail City (Sep –2018)
Talk: Magnetic Monopoles, Dirac's Dream

Physics Seminar, University of Minnesota Duluth (Feb –2019)
Talk: An Introduction to Magnetic Monopole

Physics Seminar, University of Minnesota Duluth (Feb –2019)
Talk: Search for Magnetic Monopole using NOνA Far Detector

Physics Seminar, University of Minnesota Duluth (Mar –2019)
Talk: Dark Matter Search in NOνA Near Detector

Physics Seminar, University of Minnesota Duluth (Feb –2019)
Talk: An Introduction to Magnetic Monopole

Physics Seminar, University of Minnesota Duluth (Jan –2020)
Talk: Introduction to Magnetic Monopole

Physics Seminar, University of Minnesota Duluth (Feb –2020)
Talk: Magnetically Charged Black Holes

Volunteering & Mentoring

- Founder of Physics Club Zewail University 2013–2018
  Founder and the president of physics club at Zewail City
- Student mentor at UMD 2019 –2020
  Member of the program aims to assist incoming international students with their transition to UMD.