

EDUCATION

Purdue University West Lafayette, IN
Bachelor of Science in Theoretical Mathematics (GPA: 3.00) Class of 2024
Minor: Earth, Atmospheric, and Planetary Sciences (EAPS)

- Data Science certificate (Expected Dec. 2024)
- Relevant Coursework: Differential Equations, Statistics, Probability, Linear Algebra II, Abstract Algebra

EXPERIENCE

Research Assistant West Lafayette, IN
Purdue University June 2023 - Present

Notions of Positivity and Complexity in Quantum Information Theory (*Supervised by Professor Thomas Sinclair*):

- Utilized a support vector machine to run code that determined the properties of positive semi-definite matrices and plotted the 3D-images they projected on graphs.
- Currently providing an alternate proof of Farkas' Lemma using convex optimization and Euclidean distance geometry.
- Exercised problem-solving in a range of math disciplines.

Research Assistant West Lafayette, IN
Purdue University May 2022 – Dec 2022

Regional Features of Periodic Variability in Mars's Storm Track and Their Relationship with Large Dust Events (*Mentored by Professor Lei Wang of Purdue University and Michael Battalio of Yale University*):

- Formulated research questions concerning planetary climates and atmospheric dynamics with a focus on the Martian atmosphere to understand the large-scale waves present.
- Presented on Rossby Waves and Annular Modes to the research group.
- Attended an informal boot camp for Geophysical Fluid Dynamics.

CODING PROJECTS | github.com/karim-sharkawy

Class Project (*An Analysis of Trending Videos and COVID-19*)

- Programmed two large data sets in R for a final project and wrote a 37-page paper on our findings.
- Studied statistical methods including confidence intervals, ANOVA and Linear Regression, and the Central Limit Theorem.

Purdue Data Mine

- Implemented data science strategies including scraping and parsing websites using XML, manipulating data frames using PANDAS, and accessing and extracting information from large data sets using Selenium

EXTRACURRICULARS

Clubs West Lafayette, IN
Purdue University Sep 2020 – Present

- Global Science Partners
Mentored international students in the College of Science.

- Muslim Student Association
Vice President and religious chair
- Meteorological Association
Secretary

Outreach

Purdue University and outside community

West Lafayette, IN

Oct 2019 – Present

- Recorded a video during Purdue EAPs passport week teaching children about exoplanets and climate change for Earth Day.
- Served as camp counselor for an elementary school in Troy, Michigan and led a group of 12 children.

SKILLS

Programming Skills	Python, Scikit-learn, SQL, R, XML
OS/Management	Git
Languages	Arabic (fluent), German (intermediate), Korean (basic)
Interests	Islam, philanthropy, scientific culture, poetry, climate change mitigation