Mohammad K.

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Linkedin Profile
GitHub Profile

Motivated and detail-oriented engineering student with a strong foundation in Python programming, data engineering, and scientific computing. With hands-on experience developing complex simulations and analytical models, I excel at translating theoretical concepts into practical applications. My projects, such as the simulation of Mercury's perihelion precession and optical physics modeling, demonstrate my ability to work on challenging problems in both physics and data science. I am seeking an internship or part-time role where I can apply my advanced technical skills in a collaborative, real-world environment.

EXPERIENCE

INOVA Fair Oaks Hospital, Fairfax, VA — Volunteer
June 2022 - July 2023

- Assisted hospital staff in patient care and hospital operations.
- Supported healthcare professionals in the medical field with administrative tasks and patient interaction.
- Demonstrated dedication by volunteering for over a year, gaining first-hand experience in healthcare.

EDUCATION

Northern Virginia Community College, Annandale, VA — Associate Degree in Computer Engineering (Expected 2027)
September 2023 - Present

- Currently pursuing foundational studies in computer engineering, data engineering, and software development.

University of Alberta, Edmonton, Alberta — Coursework in Engineering
September 2022 - April 2023

- Completed foundational engineering courses before transferring.

High School, Oakton, VA — Advanced High School Diploma
Graduated June 2022

- Completed a rigorous high school curriculum, achieving advanced coursework in math, science, and computer programming.

Bottega University, Online — Earned College Credit

SKILLS

- **Programming Languages**: Python, Java, JavaScript
- **Data Science Tools**: NumPy, SciPy, Matplotlib
- **Software**: AutoCAD, Git
- **General Skills**: Problem-solving, research, teamwork

AWARDS

Congress of Future Medical Leaders Certification of Excellence
June 2021

- Received recognition for academic achievement and leadership potential from the Congress of Future Medical Leaders.

Advanced High School Diploma
June 2022

- Completed advanced coursework in science, mathematics, and technology with high academic standing.

Bottega University College Credit Award
2021

- Awarded college credit

2021

- Completed a 10-page research essay on "The Congress of Future Medical Leaders."
- Earned college credit through this project-based learning experience.

Projects

Optical Physics Simulation

Designed a Python simulation to model light propagation and interaction with materials using principles of optical physics, focusing on phenomena such as reflection, refraction, and absorption.

- Mathematical Modeling: Integrated advanced mathematical equations, including the Fresnel equations and Snell's Law, to accurately depict the behavior of light when interacting with different media.

- Scientific Computing: Employed NumPy and SciPy for efficient matrix calculations, improving computational performance by optimizing light propagation algorithms to handle complex interactions.

- Visualization: Visualized the interactions of light rays with reflective and refractive surfaces, utilizing Matplotlib for 2D plotting of paths and surface interactions.

-Impact: Developed a tool to simulate realistic light behavior, which can be applied to optical system designs, material science research, and educational purposes.

Key Achievement: Built a scalable framework capable of simulating multiple light-matter interactions, providing insights into the behavior of materials under various optical conditions.

Perihelion Precession of Mercury

Developed a Python program to analyze and visualize Mercury's perihelion precession using advanced data analysis techniques and general relativity principles.

- Data Analysis: Processed large datasets using NumPy and SciPy to calculate perihelion positions over time, improving data accuracy by applying vector operations and filtering techniques.

- Scientific Achievement: Successfully simulated and validated the precession angle using both empirical and theoretical data, aligning closely with established values of 43 arcseconds per century.

- Data Visualization: Generated comprehensive plots using Matplotlib to visualize the progression of Mercury's orbit, providing visual proof of the

for completing a 10-page research essay.

LANGUAGES

Fluent in English and Arabic, Proficient in French (3 years of high school)

effects of general relativity on its motion.

- Impact: Demonstrated deep understanding of celestial mechanics and scientific programming, contributing to the academic analysis of astronomical phenomena.

Key Achievement: Accurately simulated Mercury's precession, verifying Einstein's theory of general relativity through precise numerical calculations.