Kiera McCormick — CV

Johns Hopkins University
3400 N Charles St.
Baltimore, MD 21218

kmccor23@jh.edu
(302) 685-3128
ORCID: 0009-0002-3503-4721

EDUCATION

Johns Hopkins University **Baltimore, MD**

Masters of Science in Engineering in Computer Science Starting August 2025

- **Concentration:** Human Language Technology

Loyola University Maryland **Baltimore, MD**

Bachelor of Science in Engineering Graduated May 2025

- **Concentrations:** Electrical and Computer Engineering
- **Minor:** Mathematics
- **GPA:** 3.745
- **Dean's List Honors:** Fall 2021, Spring 2022, Fall 2022, Spring 2023, Fall 2023, Spring 2024, Fall 2024
- **Relevant Coursework:** Physics I & II, Linear Circuit Analysis, Statics, Calculus I, II, III, Electronics, Digital Logic, Quantum Computing, Signals and Systems, Ordinary Differential Equations, Programming Tools, Object-Oriented Engineering Design, Probability and Statistics, FPGA Design, Communications, Linear Algebra, Electromagnetics, Microprocessor-Based Systems, Advanced Linear Algebra, Quantum Computing II, Power Systems, Engineering Systems Analysis

Danish Institute for Study Abroad **Copenhagen, DK**

Core Course: Holocaust and Genocide *Spring 2024*

PROJECTS

Quantum Computer Simulator **Spring 2022**

- Engineered a Quantum Computer simulator in Python, leveraging object-oriented programming principles in a semester-long collaborative project.

Solar Panel Mars Rover **Fall 2023**

- Collaborated in a four-person team to design and construct an autonomous Mars Rover prototype with innovative solar recharging capabilities.
- Spearheaded the development of the rover's motion control system using Arduino programming, optimizing mobility and navigation.
- Engineered a power conversion system to efficiently utilize solar energy for autonomous recharging.
- Implemented an advanced sun-tracking algorithm for the solar panel, maximizing energy collection in variable conditions.

Hotspot Homing Robot **September 2024 - May 2025**

- Developee an autonomous mobile robot designed to detect and localize rogue access points in office environments, sponsored and mentored by members of the Applied Signal Technology sector at Raytheon.
- Integrated wireless signal processing and detection techniques with navigation systems, such as Simultaneous Localization and Mapping, to create a comprehensive security solution.
- Collaborated with an interdisciplinary team to design a user-friendly interface for real-time threat visualization and reporting.

RESEARCH AND WORK EXPERIENCE

Center for Astrophysics | Harvard & Smithsonian **Cambridge, MA**
AstroAI Summer Intern
January 2025 – Present

- Utilizing prompt engineering to get the most discriminative physical information about astrophysical events identifiers listed in the Chandra Source Catalog and SIMBAD.
- Evaluating how physical information is encoded in LLM-generated summaries.
- Conducting astronomer validation of LLM-generated summaries through a standard protocol and web interface.

Space Telescope Science Institute and Johns Hopkins University **Baltimore, MD**
Summer Astronomy Space Program and the Annual Jelinek Memorial Summer Workshop
May 2024 – August 2024

- Examined the application of Artificial Intelligence and machine learning, particularly Large Language Models (LLMs), in astronomy research. Assessed the potential of LLMs to enhance research efficiency and reliability.
- Designed and implemented LLM-powered chatbots for deployment on Slack, specializing in prompt engineering, conducting comparisons between open and closed-source models, integrating information retrieval pipelines, and creating evaluation benchmark datasets.

Omega Technical Services at Los Alamos National Laboratory **Los Alamos, NM**

Engineering Intern
May 2023 – August 2023

- Collaborated with the industrial engineering team at the Los Alamos National Laboratory, focusing on task scheduling optimization through databases and automation. Transformed a previously manual task of job scheduling to an automated system.
- Utilized database coding and conducted data analysis using tools such as MicroStrategy, Excel, SQL, Python, VBA, and Confluence, contributing to the creation of metrics and dashboards for effective data visualization.
- Worked towards automating an extract, transform, load (ETL) pipeline through MariaDB, MS Task Scheduler, and Alteryx.

Loyola University Maryland **Baltimore, MD**
Physics Teaching Assistant and Tutor
September 2022 – May 2025

- Direct students in weekly Physics problems that align with their ongoing coursework.
- Work for two hours weekly in the Physics lab for students seeking help with specific topics.

University of Delaware **Newark, DE**
Junior Physics Intern
March 2020 – August 2020

- Contributed to an astrophysical research project analyzing the spectral characteristics and luminosity of massive stars. Developed Python scripts using Jupyter Notebook to process and visualize complex stellar data.
- Created data visualizations of spectral lines and magnitude measurements, enhancing the interpretation of stellar properties.

PUBLICATIONS

Note: * first authorship.

- *Designing an Evaluation Framework for Large Language Models in Astronomy Research*
    - Wu, J. F., Hyk, A., **McCormick, K.,** Ye, C., et al., 2024, *ICML: AI4Science workshop*, submitted, arXiv:2405.20389.
- **Real-World Evaluations of LLMs for Astronomy Research*
    - **McCormick, K.,** Hyk, A., Wu, J. F., 2024, *NeurIPS: EvalEval workshop,* submitted.
- **From Queries to Criteria: Understanding How Astronomers Evaluate LLMs*
    - **McCormick, K.**, Hyk, A., Zhong, M., Ciucă, I., et al., 2025, *COLM*, accepted.
- *pathfinder: A Semantic Framework for Literature Review and Knowledge Discovery in Astronomy*

- Iyer, K. G., Yunus, M., O'Neill, C., Ye, C., Hyk, A., **McCormick, K.,** et al., 2024, *ApJS 275 38,* arXiv:2408.01556.

CONFERENCES

Machine Learning conference/workshop paper reviewer for *NeurIPS*

Volunteer at the *AstroAI Workshop*

Gender Minorities and Women in Physics Summit **Johns Hopkins University**

Poster Presentation September 14, 2024

- Discussed work on the application of Large Language Models in Physics and Astronomy.

American Astronomical Society 245 **National Harbor, MD**

iPosters January 11-16, 2025

- Presented "Evaluating Large Language Models in Astronomy Research" at the Machine Learning Methods session.
- Co-authored "pathfinder: a Semantic Framework for Literature Review and Knowledge Discovery in Astronomy" at the Machine Learning Methods session.

Talks

- Co-authored "Evaluating LLM Tools: Insights from Astronomer Interactions with a RAG-Based Slack Chatbot" at the Technology Developments in Outreach, Education, and Research session.

AstroAI Workshop **Cambridge, MA**

Poster Presentation

- Presented "Evaluating Large Language Models in Astronomy Research".

TECHNICAL SKILLS

Python, Java, SQL, VBA, C++, Git, MATLAB (certified), Simulink, Raspberry Pis, Arduinos, FPGAs, SolidWorks, LT Spice, Active HDL

Completion of the 2024 Summer School on Human Language Technology at Johns Hopkins University

EXTRACURRICULAR ACTIVITES

Society of Women Engineers **Baltimore, MD**
President February 2023 – May 2025
Engineering Industrial Advisory Board **Baltimore, MD**
Class of 2025 Representative December 2023 – May 2025

Loyola University Maryland Honors Program **Baltimore, MD**
Member and Peer Mentor September 2021 – May 2025
Haig Scholar **Baltimore, MD**
Member February 2024 – May 2025
Loyola Women's Club Lacrosse Team **Baltimore, MD**
Academic All-American September 2022 – May 2025
Institute of Electrical and Electronics Engineers **Baltimore, MD**
Member October 2021 – May 2025