MICHAEL RAY

Accomplished student with more than four years of research experience now looking to move into the data science industry

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EXPERIENCE

Research Assistant
Supervised by Dr. Rosalba Perna

📅 May 2021 – Present   📍 Stony Brook University

- I work on problems in computational astrophysics. This work has allowed me to improve my data analysis and programming skills. I use Python daily in order to perform data analysis.

Research Assistant
Supervised by Dr. Philip Argyres

📅 March 2020 – Aug 2021   📍 University of Cincinnati

- I worked on problems in quantum field theory. This work allowed me to greatly improve my mathematical skills and abstract thinking skills.

Research Assistant
Supervised by Dr. Colin Bischoff

📅 Jan 2018 – March 2020   📍 University of Cincinnati

- This work was in cosmological data analysis. See further info below under "Projects".

PROJECTS

Deep Learning Stock Market Predictor
- https://github.com/michaelray1/rh_trading
- This package uses tensorflow to train a neural network to make stock market predictions. Through this project, I learned how messy real-world data can be and how to work with messy data. I also learned the basics of neural networks and how to apply tensorflow to train a neural network. Additionally, I gained extra practice using object-oriented design for my programming.

Cosmological Data Analysis
- https://github.com/michaelray1/messenger_method
- This is part of my work with Dr. Bischoff. I built (from scratch) a data pipeline in Python to take in astronomical data and output a "cleaned" version of the data. Through this experience, I became highly skilled in data manipulation, analysis, and visualization using Python. I also learned coding best-practices and how to use object-oriented design to modularize code.

Charged Particle Simulator
- https://github.com/michaelray1/AdvLabComputation/blob/master/AdvLabComputation.py
- Simulation in python to solve for the path of a charged particle under the influence of a specified E-M field

SKILLS

- **Programming**
  Python (5 years) - {Numpy, Pandas, Matplotlib}; Linux/Command Line (4 years); C++(6 months); object-oriented programming; Git/Github

EDUCATION

M.A. Physics
Stony Brook University

📅 Aug 2021 – Aug 2022

B.S. Physics; B.S. Mathematics (double major)
University of Cincinnati

📅 Aug 2017 – May 2021

- 3.98/4.0 cumulative GPA

DOCUMENTED WORKS

Publications
- P. C. Argyres, M. Martone, and M. Ray, Dirac pairings, one-form symmetries and Seiberg-Witten geometries, (2022), [https://arxiv.org/abs/2204.09682]

Other Works
- **Undergraduate Thesis in Mathematics**
  - https://michaelray1.github.io/assets/Math_Capstone_FD.pdf
- **Undergraduate Thesis in Physics**
  - Paper: https://michaelray1.github.io/assets/Senior_capstone_physics.pdf
  - Poster: https://michaelray1.github.io/assets/Capstone_poster_physics.pdf
- **CMB Data Analysis Poster**
  - Second place in UC Physics poster competition
  - https://journals.uc.edu/index.php/Undergradshowcase/article/view/4117/3124
- **CMB-S4 Internal Logbook Posting**
  - https://cmb-s4.uchicago.edu/wiki/index.php/PureB_by_Messenger_Method

AWARDS

- **Fellowships:**
  NDSEG Fellowship (2022, 4% acceptance rate, declined to pursue career in data science); SBU Fellowship (2021-22); Joiner Fellowship (2020)
- **Selected Scholarships (I won 16 total merit-based scholarships between 2017 and 2021):**
  Physics Alumni Endowed Scholarship (2019-20); UC Physics Scholarship (2018-21); Cincinnatus University Scholarship (2017-21); UC Arts and Sciences Scholarship (2017-19)
- **Miscellaneous:**
  UC Sophomore Achievement Award in Physics; Dean's List; Member of Sigma Pi Sigma physics honor society; Member of Phi Beta Kappa academic honor society; Eagle Scout