Tim Healy

Email: thealy5011@gmail.com ● **LinkedIn:** www.linkedin.com/in/tim-healy-/

Portfolio: https://www.timhealyworks.com/ ● **GitHub:** https://github.com/timh5011

Education:

University of Illinois Urbana-Champaign Date of Graduation: May 2025
Bachelors of Science in Mathematics (Applied Mathematics) Cumulative Major GPA: 3.43/4.0
Physics Minor

Work Experience:

Muon Tomography Lab at Occidental College, Supported by KoBold Metals **Los Angeles, CA**
Research Assistant **June 2021 - Present**
- Assembled, tested, and debugged surface array of cosmic air shower detectors and borehole detectors
- Soldered, tested, and debugged signal transmitter boards and constant fraction discriminator (CFD) boards
- Maintained inventory of electrical components for assembly and circuit boards
- Analytically calculated and computationally simulated terrestrial gamma-ray background on borehole detectors and corresponding detector response
- Worked on embedded software engineering and IoT network design for detector GPS communication system. Implementing over-the-air (OTA) update programming procedure for microprocessors to be programmable over long distances via WiFi.
- Aided in optimizing design of next generation of scintillation detectors by simplifying design, removing unnecessary components, while maintaining detector efficiency.
- **Technologies:** Python, MicroPython, C++, GEANT4, IoT, Embedded Software, Electronic Circuit Boards, u-blox gps units, ESP32 Microprocessor

High Energy Physics Muography Lab at UIUC (in collaboration with Occidental College, Supported by KoBold Metals) **Champaign, IL**
Computational High Energy Physics Research Assistant **March 2024 - May 2025**
- Built and analyzed simulations with C++ package Geant4 to model highly energetic particles colliding with matter with monte carlo methods
- Analytically calculated the energy particles deposit into matter upon collision to validate the results of computation simulation
- Performed statistical analysis on results of simulation and created and presented clear visualizations of results
- Assembled first round prototype of cosmic air shower scintillator detectors within a month long period to reach deadline for distribution
- Managed daily operations and inventory for lab during period prior to and during detector assembly
- **Technologies**: C++, Python, GEANT4, ROOT Data Analysis Framework

Axis Capital Research Center **Champaign, IL**
Data Engineer Intern **Jan 2023-Aug 2023**
- Led project performing statistical analysis on financial and geo-spatial data to estimate financial loss distributions from CAT models
- Transferred old company database onto new system, resulting in increased efficiency in data retrieval
- **Technologies:** Python, R, SQL, Databricks Notebooks

True Food Kitchen – *Back Server* **Chicago, IL – May 2022-Aug 2022**
Lady Gregory Irish Pub – *Support Staff* **Chicago, IL – June 2021-Aug 2021**

Leadership Experience:

Special Interest Group in Mathematics and Algorithms (SIGma) of ACM@UIUC **Champaign, IL**
Member **Jan 2024 - May 2024**
- Participating in weekly meetings dedicated to topics of interest in mathematics, with emphasis on theoretical computer science
- Focus on topics in computational complexity theory

Special Interest Group in Quantum Computing (SIGQuantum) of ACM@UIUC **Champaign, IL**
Member **Jan 2024 - May 2024**
- Participating in weekly meetings dedicated to quantum computing. Focused both on theory and technologies.

American Advertising Federation at Illinois **Champaign, IL**
AAF Executive Board Member, Executive Account Director of CTRL+V Production Agency **June 2023 - Dec 2023**
- Ran largest video production agency on UIUC campus (approximately 40 members) alongside President and Creative Director. Acted as main line of communication between 5 local clients and 5 production teams. Conducted interviews and formed production teams. Ensured promotional videos were delivered
- Ran weekly meetings directing members through all stages of video production process. Attended weekly AAF executive board meetings

Account Director of Production Team **Sep 2022- June 2023**
- Produced promotional video for local client. Ensured ambitious goals were delivered. Planned shoot logistics. Co-wrote storyboard

Certifications and Skills:

- Stanford Online, DeepLearning.AI Certification: Advanced Learning Algorithms (covers Neural Networks and Tree Ensembles with TensorFlow)
- Stanford Online, DeepLearning.AI Certification: Supervised Machine Learning: Regression and Classification
- Proficient in C++, Java, Python, R, SQL, Wolfram Mathematica, Geant4, ROOT, Jupyter Notebooks, Databricks Notebooks
- Computational Physics, Monte Carlo Simulations, Numerical Methods
- Ability to clearly communicate scientific concepts in simple and digestible terms.

References Available upon request