Abraham Teklu

+1 (971) 533-1437 | Email: amthagos@gmail.com | Website: https://abrahamteklu.com/ | Stony Brook, NY

SUMMARY

Physics Ph.D. and adaptable engineer with 8+ years of experience building robust data pipelines, high-performance computing (HPC) simulations, and production ready software in Python and C++. Worked across the full development lifecycle, from designing scalable architectures to deploying reliable systems. Skilled at translating ambiguous research problems into actionable solutions through rigorous statistical modeling, algorithm development, and clear communication. Eager to leverage expertise toward ML driven decision systems.

EDUCATION

Stony Brook University, 2018 to 2026
Doctor of Philosophy, Ph.D. — Physics
- GPA: 3.67
- Awards: Turner Fellowship, Lourie Fellowship

Oregon State University, 2014 to 2018
Bachelor of Science, B.S. — Physics
- GPA: 3.80
- Awards: Academic Achievement Award, Nicodemus Scholar Award, Ken Krane Scholar Award

SKILLS

Technical Skills:	Python, C++, ROOT, Linux Bash, Git, Docker, Singularity, CUDA, Matlab, HTML
Team Skills:	Communication in Large Collaborations, Presentation Experience
Research Skills:	Problem Solving, Data Analysis, Statistics, Algorithmic Programming

PROFESSIONAL EXPERIENCE

Neutron Reconstruction for T2K — Stony Brook University December 2021 – Present
Graduate Research Assistant
- Tools: ROOT, C++, Python
- T2K is a large collaboration of scientists, postdocs, and graduate students from around the world.
- Working on a team to develop data analysis tools to select neutrons in neutrino events.
- My current work improves neutrino energy calculations and the oscillation analysis fit, the main goal of T2K.

Construction of the Super-FGD — Stony Brook University October 2022 – December 2022
Graduate Research Assistant
- Joined 20 people for the T2K Near Detector Upgrade and assemble a detector made of 2 million scintillator cubes.
- Assembly took place at JPARC, a high-intensity proton accelerator facility located in Tokai, Japan.
- Completed the project and delivered the detector a month before the deadline.

T2K Oscillation Analysis — Stony Brook University January 2021 – December 2021
Graduate Research Assistant
- Tools: ROOT, C++, Docker, Singularity, CUDA
- Architected containerization of a fitting framework to execute large-parameter MCMC fits on NVIDIA GPUs using Docker and Singularity. This enabled the first-ever joint oscillation analysis between T2K and NOVA (750+ members, 12+ countries)

Programming Bootcamp — LISEA February 2023 – May 2023
Teacher / Mentor
- Tools: Python, Pandas, Matplotlib, Scikit-learn, Jupyter
- Created a 6-week data science curriculum for a small group of disenfranchised minorities. See more here, lisea.org
- Lectured and have 1-on-1 sessions to improve programming skill and help with assignments.

Novel 3D Scintillator Detector Prototypes — Stony Brook University August 2019 – August 2023
Graduate Research Assistant
- Tools: ROOT, C++, Python
- Created and executed relevant physics studies that led to new measurements of the neutron cross-section and doubled the energy range of the existing neutron cross-section measurements on scintillator.
- Worked with 61 researchers from 19 universities on the prototype construction at CERN (Geneva, Switzerland) and Stony Brook University (Stony Brook, NY). Led a data-taking team in Los Alamos National Lab (Los Alamos, NM) and was a major contributor to the analysis.
- The work produced 3 co-authored publications and an APS April Meeting Talk.

CERN — Stony Brook University June 2018 – August 2018
Visiting Research Assistant
- Tools: ROOT, C++, Python
- Assembled and tested the Super-FGD Prototype. The world's first detector that can do event-by-event neutron kinematic reconstruction. Ran the first tests with a charged particle beam on a detector of this type.

General Atomics DIII-D Tokamak Fusion Reactor June 2017 – August 2017
SULI Intern
- Tools: C++, Python
- Worked with 3 staff scientists at DIII-D, to model plasma in the DIII-D Tokamak Fusion Reactor.
- Contributed to a co-authored publication, and presented a poster at the APS DPH Meeting. Also contributed to 4 other co-authored talks and posters.

CIERA REU — Northwestern University June 2016 – August 2016
CIERA REU Intern
- Tools: MATLAB, HTML
- Found an approximate numerical solution for an unstable region of the Holling-Tanner model computationally.
- Presented findings in a poster at the American Astronomical Society (AAS) and made a website, CIERA REU.

Fermilab — Oregon State University January 2016 – January 2018
Undergraduate Research Assistant
- Tools: ROOT, C++, Python
- Modeled antineutrino interactions for the MINERvA detector at Fermilab.
- Analysis was included in a co-authored publication by the MINERvA collaboration.