Rian Flynn

THEY/THEM/THEIRS

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Summary

A3D3 Postbaccalaureate Fellow conducting research in the intersection of experimental high-energy physics and machine learning, seeking to leverage interdisciplinary background in software, physics, and the arts to pursue graduate studies in societal computing and research ethical and responsible AI.

Education

Massachusetts Institute of Technology *Cambridge, MA*

BACHELOR OF SCIENCE IN PHYSICS AND THEATER ARTS *June 2021*

GPA 4.9/5.0.

SELECTED COURSEWORK

Introduction to Deep Learning, Introduction to Machine Learning, Introduction to Algorithms, Fundamentals of Programming, Experimental Physics I, Relativity, Quantum Physics III, Statistical Physics I, Introduction to Quantum Computing, Probability and Random Variables, Differential Equations.

SELECTED PROJECTS

Physics Junior Lab

FINDING EVIDENCE FOR THE HIGGS BOSON USING A NEURAL NETWORK *April–May 2020*

- Pioneered the novel approach of using only a neural network to classify proton-proton collisions at the Large Hadron Collider as Higgs events or background events, finding evidence for the Higgs boson at a 3σ significance level at a mass within 0.3% of the literature value.

Experience

RESEARCH

Purdue University *West Lafayette, IN*

RESEARCH ASSISTANT / A3D3 POSTBACCALAUREATE FELLOW *June 2024–Present*

- Converting efficient transformer models to run on FPGA architecture using high-level synthesis.
- Contributing to hls4ml, an open-source package for machine learning inference in FPGAs.

Schilbach Group, MIT *Cambridge, MA*

RESEARCH ASSISTANT (PUBLIC ECONOMICS) *September–December 2020*

- Engineered a customizable PDF scraper in Python to execute a thorough quantitative review of the literature on social welfare programs.
- Extracted critical variables related to welfare stigma from large public survey datasets and cleaned and visualized these data using R.

Scheib Group, MIT *Cambridge, MA*

RESEARCH ASSISTANT (THEATER ARTS) *June–August 2020*

- Developed Virtual Reality techniques, in C++ and Unreal Engine, for a 2023 full-scale VR production of Richard Wagner's opera Parsifal.

Shor Group, MIT *Cambridge, MA*

RESEARCH ASSISTANT (APPLIED MATHEMATICS) *February–May 2019*

- Simulated the process of a black hole scrambling information, harnessing Python's networkx to model a Markov process on an n-ary tree.

Tegmark Group, MIT *Cambridge, MA*

RESEARCH ASSISTANT (COMPUTATIONAL NEUROPHYSICS) *May–December 2018*

- Engineered a pipeline of MATLAB programs to analyze large quantities of data obtained by multi-electrode arrays from *in vitro* stem-cell-grown human neurons.

Formaggio Group, MIT *Cambridge, MA*

RESEARCH ASSISTANT (NUCLEAR PHYSICS) *January–February 2018*

- Created a program for simulating low-energy neutrino spectra from nuclear reactors.

WORK

Seeq Corporation   *Remote*

SOFTWARE DEVELOPMENT ENGINEER   *September 2021–November 2023*

- Developed software to integrate third-party time-series data into Seeq's analytics platform.
- Optimized data retrieval code to achieve 90% faster speed from a key third-party source.
- Collaborated with a cross-functional team during a company-wide hackathon to build a winning solution that was incorporated into Seeq's offering.
- Facilitated development of new processes to increase engineering efficiency by accelerating PR reviews and balancing escalated support ticket loads.
- Shipped high-quality solutions focused on performance, scalability, correctness, and ease of use.
- Debugged complex software interactions, including race conditions, threading issues, and intermittent bugs.

SKILLS

Programming	Python, C++, Java, Kotlin, .NET, C#, SQL, JavaScript, React, R, MATLAB, LaTeX
Deep Learning	PyTorch, TensorFlow, Keras
Operating Systems	Linux (Debian and Arch), Windows
Languages	English (native), Mandarin Chinese (fluent)

Distinctions

2021	**Inductee**, Phi Beta Kappa
2021	**Joel Matthew Orloff Service Award** (for outstanding service to the physics community), MIT Physics Department
2021	**Laya and Jerome B. Wiesner Student Art Award** (for outstanding achievement in and contributions to the arts), MIT Music and Theater Arts Department
2021	**Joseph D. Everingham Award** (for notable creative accomplishments in theater arts), MIT Music and Theater Arts Department
2017	**National Merit Scholar**, National Merit Scholarship Corporation
2017	**Platinum Rank**, USA Computing Olympiad
2017	**Bronze Medal**, USA Physics Olympiad
2016	**Gold Medal**, Math Prize for Girls Olympiad
2016	**Math Olympiad Summer Program Attendee**, USA Mathematical Olympiad

Leadership

Seeq Neurodiversity Employee Resource Group   *Remote*

CO-CHAIR   *August 2022–November 2023*

- Ran monthly member meetings, facilitated biweekly support meetings, and conducted manager and team trainings to help raise awareness of neurodiversity within Seeq, advocate for neurodiverse needs, and promote mutual understanding between neurotypical and neurodivergent employees.

Seeq Connectability Squad   *Remote*

RETRO LEAD   *March 2022–November 2023*

- Led monthly retrospectives for my immediate team to reflect on team processes, spur creative problem-solving, and identify areas for improvement.
- Facilitated discussions resulting in creating new tools to speed up the PR review process and balance the load of escalated support tickets.

MIT Undergraduate Womxn in Physics   *Cambridge, MA*

EXECUTIVE BOARD MEMBER   *February 2019–February 2021*

- Organized social events, outreach events, student-faculty dinners, talks and panels, and a mentorship program for women, gender nonconforming, and nonbinary students of physics.

MIT Society of Physics Students   *Cambridge, MA*

PROFESSIONAL DEVELOPMENT CO-CHAIR   *May 2019–May 2021*

- Coordinated career-focused events to help physics undergrads think about next steps after graduation, whether in academia or in industry.
- Orchestrated, hosted, and moderated two virtual panels consisting of MIT alumni in a broad range of industries.

MIT Leadership Training Institute   *Cambridge, MA*

LEADERSHIP DEVELOPMENT MENTOR   *September 2017–May 2021*

- Mentored high school students in leadership and personal growth; won 2018–2019 best mentor award.
- Customized the curriculum to students' individual and group needs, facilitated discussions, coordinated leadership exercises and activities, and guided students toward better communication and presentation skills.

Interests

Music	Singer-songwriter and multi-instrumentalist: guitar, violin, piano, and ukulele.
Theater Arts	Actor, director, and enthusiastic audience member.
Language Learning	Mandarin Chinese, Taiwanese Hokkien, and Spanish.