

Hayden Tibbals

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Personal Profile

Recent MPhys graduate with first-class honours from The University of Manchester, specialising in quantitative analysis and machine learning. For my master's project, I developed an AI model to optimise proton beam therapy plans in collaboration with NHS Christie Hospital. Additionally, I have pursued independent projects, including predictive models for football outcomes and algorithmic trading strategies. Proficient in Python, and reinforcement learning, I have experience leveraging data to deliver innovative solutions. My involvement with the Stony Brook University D1 Rugby team has enhanced my teamwork and leadership skills, which I apply in professional settings. I am eager to contribute my technical expertise and collaborative mindset in a dynamic analytical role.

Education

The University of Manchester

Manchester, UK

MPhys (Hons) Masters of Physics with Study Abroad

Sep 2020 - Jul 2024

- Achieved a first-class degree with a focus on machine learning and quantitative analysis. (Overall grade in top 5% in year 3)
- Developed strong analytical and problem-solving skills through rigorous coursework in data science, quantum mechanics, and programming.
- Notable project: Designed a machine learning model to automate cancer patient treatment plans using reinforcement learning (graded 79%, top 10% of cohort).
- Peer mentor for first-year undergraduates and volunteer for Physics Outreach programs.

Stony Brook University, New York

Stony Brook, New York

MPhys (Exchange year)

Aug 2022 - May 2023

- Completed an exchange year with a 3.8 GPA, integrating into a diverse international academic environment.
- Focused on laboratory, data analysis and communication through presentations during study abroad.

The Skinners' School

Tunbridge Wells, UK

Secondary Grammer School

Sep 2012 - May 2020

- A levels: Maths A*, Physics and Further Maths A.

Internships

Broadhaven Ventures

Miami, Florida

Applied AI Research Intern

Jul 2023 - Sept 2023

- Collaborated closely with the principal to develop AI-driven tools for automating research and generating strategic briefings.
- Utilised Generative AI frameworks to streamline internal operations, automating data gathering and reducing manual workload. Removed the need for an initial 30 minutes of introductory research.
- Skills:** AI Automation, Python, Prompt Engineering, Web Development (React, OpenAI API), Team Collaboration.

Projects

Automation of Cancer Patient Treatment Plans using Machine Learning

Manchester, UK

The University of Manchester

Oct 2023 - Jun 2024

- Collaborating with NHS Christie Hospital to develop an AI model for optimising complex cancer treatment plans using reinforcement learning.
- Preprocessed and refined large-scale patient datasets, to simulate treatment and optimise dose planning.
- Trained and fine-tuned reinforcement learning models to create mock plans by deciding optimal dose placement.
- Technical Skills:** Python, Reinforcement Learning, Stable Baselines, Pytorch, Data Preprocessing.

Machine Learning and AI-Driven Applications

Crowborough, UK

Independent Projects

Jul 2020 - Present

- Developed a machine learning model to predict Premier League match outcomes with 68% accuracy using feature engineering.
- Implemented basic algorithmic trading models for portfolio optimisation, utilising mean-variance optimisation and Monte Carlo simulations.
- Created AI-powered web apps using React and OpenAI API, including a negotiation chatbot.
- Consulted with a small business to develop an AI-powered customer management software
- Technical Skills:** Python, Pandas, Scikit-learn, XGBoost, Quantitative Finance, React, OpenAI API.

Skills

Programming Languages: Python, SQL, C++, React, TypeScript, **Libraries:** Pandas, Tensorflow, Pytorch, Sklearn, Pydicom, OpenAI.

Miscellaneous Linux, \LaTeX (Overleaf), Microsoft Office.

Soft Skills Time Management, Teamwork, Problem-solving, Documentation, Presentations.

Interests

Rugby Representing The Stony Brook University D1 Rugby team, including an international 7s tournament in Bermuda.

Running Avid runner, having completed the Manchester marathon, raising £1200 for charity.

Kaggle Entering Kaggle competitions and working with public datasets.

Additional Work Experience

Morrisons Supermarkets

Customer Service Assistant

Crowborough / Manchester, UK

Apr 2019 - Aug 2022

- Worked part-time at a supermarket to supplement my income during my studies.
- **Soft Skills:** Teamwork, Time Management, Communication, Customer Service.