Fintan Hardy

PhD Candidate, Imperial College London

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Summary

I am a first-year PhD candidate at Imperial College London's Department of Materials, where my research is focused on crafting vision and text AI models for microscopy. I am also keenly interested in the potential of diffusion models, graph neural networks, and reinforcement learning.

Education

- **University Of Manchester** — **Manchester, UK**
  MEng (Hons) Chemical Engineering (**2:1**) — *September 2019 - July 2023*
- **Imperial College London** — **London, UK**
  PhD in AI for Microscopy — *October 2024 - March 2027*

Experience

Imperial College London — **London, UK**
PhD Candidate — *October 2024 - Present*

- Supervised by Shelly Conroy and Aron Walsh. Using AI models to analyse and extract material property information from TEM/STEM/4dSTEM/EELs data.
- Current work focused on using AI methods to extract complex information such as ferroic domain walls, atomic tilt and strain from large 4dSTEM datasets.
- Current work is exploring using autoencoders to extract useful information from the latent space.

University of Manchester — **Manchester, UK**
Research Internship — *June 2022 - September 2022*

- Achieved a place on a reserach internship at my university being supervised by Sam de Visser. The project focused on using Density Functional Theory (DFT) methods to elucidate the reaction mechanism of deoxypodophyllotoxin, a promising anti-cancer drug component.
- Learnt DFT methods and the Gaussian09 software over the corse of the project and also set up a series of scripts that could automate the data extraction and presentation to speed up my workflow significantly
- I carried the work on to my final year dissertation where I achieved a 1st class grade for my work
- The work was submitted to a journal and was published in Chemistry Europe in February 2024, where I was first author on the Publication: Computational Study Into the Oxidative Ring-Closure Mechanism During the Biosynthesis of Deoxypodophyllotoxin.

iO Academy — **Bath, UK**
Software Developer Course — *July 2023 - October 2023*

- Achieved a government funded position to take iO Academy's 12 week software developer course, learning how to write professional level code, both individually and as part of a team. Projects included writing a fully functional front end and back end for a book store using JavaScript (React), PHP (Laravel) and Git.
- Learnt proper coding practices such as SOLID principles for OOP, test driven development and writing RESTFUL APIs. As well as regular practice presenting projects as part of an agile development environment.

Skills

Languages: Python, C, C++, PHP, Javascript, LaTeX, SQL
Software: Frameworks: (Pytorch, Pytorch-lightning, Laravel, React), Data science (Numpy, SciPy, Matplotlib, Pandas), Tools (Git, LaTeX, Vim, VS Code)