Ethan Range

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Education

Imperial College London 2020 - 2023
BEng Computing *London, UK*
- 1st Year 83.3%, 2nd Year 82.6%

Loughborough Grammar School 2013 - 2020
Secondary School *Loughborough, UK*
- 4 A*s at A level in Mathematics, Further Mathematics, Physics and Computer Science
- 8 9s and 2 A*s at GCSE; A in FSMQ (Additional Mathematics)

Teaching Experience

Imperial College London September 2022 – Present
Personal Mathematics Tutor *London, UK*
- Ran small-group tutorial sessions consolidating lecture content, for mathematics and logic students
- Marked weekly problem sheets providing formative feedback for first year students

Imperial College London October 2021 – Present
Lab Teaching Assistant *London, UK*
- Aided delivery of and provided support to students for the first and second year lab curricula
- Provided one-on-one help sessions for first year students studying Haskell, Kotlin, Java and C
- Supported the running of the second year WACC Compilers lab, primarily in Scala

Professional Experience

Marshall Wace July 2022 – September 2022
Technology Intern *London, UK*
- Worked on the Infrastructure team, deploying and maintaining internal company clusters and systems
- Architected and implemented a policy creation and enforcement system for code deployments

Cub3 May 2022 – July 2022
Full-stack Contract Developer *London, UK*
- Worked as part of a contractor team of 4 at a Web3 startup, designing and building an MVP
- Created bonus allocation tool with web app and 3rd party project management tool integration
- Utilised full stack tools including Typescript, Tailwind, Next.js, Node.js and deployed on Google Cloud

Research Projects

Research Interests: Programming Languages, Algebraic Effects, Category Theory, Formalisation of Machine Learning Techniques, Type Systems

Machine Learning Framework with Categorical Lenses | *Haskell* November 2022 – Present
- Individual research project designing and creating a composable Machine Learning framework
- Combining existing work on profunctor lenses and representations of ML in category theory
- Translating theoretical, mathematical concepts describing existing systems, into a production-ready library

Probabilistic Models for Road Marking Detection | *Haskell* October 2022 – January 2023
- Worked as a team of 6 to improve Haskell support for probabilistic machine learning
- Extended published research work to create a probabilistic programming DSL in Haskell using algebraic effects
- Achieved significant performance improvements implementing the PPL on top of the `fused-effects` library
- Demonstrated utility of the PPL by creating unsupervised road marking detection with MCMC methods

Awards

Dean's List: Top 10% of cohort (Year 1) **July 2021**
ARM Prize: Best Overall Project for Y1 C Project (99% mark) **July 2021**
Dean's List: Top 10% of cohort (Year 2) **July 2022**