Emilian Joseph Bowry

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Education	**Trinity College, University of Cambridge**

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Trinity College, University of Cambridge
BA, Engineering Tripos, 2020-2025

Note: Degree awarded unclassified due to medical intermission preventing completion of Part IIB

Judge Business School, University of Cambridge
Accelerate Cambridge, August 2022-July 2023

Experience

Software Developer <div align="right">AI Compatible</div>
Remote <div align="right">August 2025 - Current</div>

- **Regulatory Analysis Engine:**
  - Adapted and improved state-of-the-art research on data extraction from privacy policies.
  - Devised an unsupervised semantic equivalence detection model of legal statements.
  - Re-derived a recently published technique of 'Random k Conditional Nearest Neighbours'

- **Redeveloping full-stack website:**
  - Style generation: client-side background image generator, CSS geometry engine, generalisation of CSSTypes library
  - Direct style-sheet injection to handle high-performance style changes, by prevent re-rendering by modifying css rules and not the elements.
  - PDF generator that implements the 'ISO 32000' PDF specification to generate PDFs from java objects and/or json
  - Contextual telemetry analysis, creates interaction based profiles utilising site-entry points, device and location data to profile user events.
  - Managing cloud infrastructure, including virtual machines and networking.
  - Devising and prototyping HTTP and API servers from scratch using Rust, to learn the fundamentals
  - Managing backend API with express.js, Prisma, PostgreSQL, mongoDB.

Co-founder <div align="right">Luucid.tech</div>
Cambridge <div align="right">August 2022 - October 2023</div>

- Created novel electrochemical and material mechanisms for detecting spiking agents in beverages.
- Determined product-market fit and commercial viability of scientific research.
- Sponsorship by University of Cambridge's startup incubator.

Software Development and Business Analysis Intern	Atomic Media
Nottingham	April 2022 - August 2022

- Built an anomaly detection system that analysis of fuel levels in a vehicle fleet to infer when there may have been an incident of fuel theft.
- Analysed new business opportunities and ventures, writing insight articles.
- Led skill days, which taught developers the low-end networking implementations of the tools they use: https://github.com/emilbowry/NetworkProgrammingLesson
- Organised the weekly cyber-security brief about emerging threats and vulnerabilities.

Published and Open Source Software

Plotting Tools: https://github.com/emilbowry/Plots
https://pypi.org/project/plottingtools-emilbowry

Extension of the python Plotly library to make 4+ dimensional correlations intuitive to the human eye

Code Editor: https://github.com/emilbowry/editor

A fork of Microsoft VSCode that:
- Improves supply chain security by removing telemetry "at the source" rather than just blocking the URL (like alternative's like 'Codium')
- Removes LLM, MCP and agetic AI integrations and bloat.
- Adds new features, like a persistent homepage, and cross-codebase note taking system

AST Debug Logger: https://github.com/emilbowry/AST-Debugger

A debugging tool that intercepts python code before execution to toggle any 'debug' flags, even from orphans and disconnected nested code. It also intercepts and saves a logs.

Algorithmic Trading resource: https://github.com/emilbowry/algorithmicTrading

A teaching resource that develops and implements knowledge gained in my signals processing, statistics, systems and other engineering courses, as well as other information I learnt from Dexter's Notes of the Mathematics Tripos. This includes appllications of:
- Analysis tools like: K-means clustering, linear regression
- Stastical tests like Augmented Dicky-Fuller, Variance Ratio, Generalised Autoregressive Conditional Heteroskedasticity, and Stationarity Analysis
- Signal Processing techniques including Fourier, Wavelet and Hilbert transforms, continuous and discrete filters.
- Optimisation techniques, it covers: linear programming, non-linear programming and convex optimisation
- Other general tools like PCA, semantic analysis, HMMs and inference tools, Metropolis-Hastings Algorithm

Projects and Additional Experience

Phasor Average Estimator: Developed a scale-invariant, Phasor-based Statistical Model to solve hardware jitter and Inter-Symbol Interference (ISI), in a Molecular Communication system. It provided zero-lag estimation, unlike moving averages; retained phase information, unlike mixture models; and provided a non-parameteric way to estimate state.

Neural Data Analysis: Built a simulation framework for simulating Lateral Intra-parietal Cortex (LIP) neurons. The core objective was to evaluate and test different statistical models for neuron impulses. The framework included:

- Utilised Stochastic Differential Equations (SDEs) as a model for Neuron Impulses 'step/ramp models'
- Assesed HMM approximations of the SDEs
- Developed a ETL (Extract, Transform, Load) process for scientific data, instead of directly using the lab's given methods.
- Used Baysian Inference to fit model parameters, and quantify model mismatch and brittleness.

iCloud Find-my messaging service: A system to piggyback on Apple's "Find my iPhone" API to remotely communicate between devices without knowledge of any identifiers like IP addresses (Side-Channel Analysis). This involved reverse engineering the protocol to analyse packet payloads/and database structures without documentation.

Automated Notes Reasoning: A system that makes inferences about my course notes, given their titles. Using techniques derived from Category Theory to deriving understand from syntax and structure to verify and generate notes, infer logical gaps, and missing objects. The implementation necessitated reverse engineering parts of the 'Obsidian Markdown Editor', in order to have a better integration than was offered in the public API and documentation; parser design: Writing a Lexer/Parser for the custom note title grammar and knowledge graph construction: Automating the generation and verification between objects based on syntax rules.

Module Type Objects: Built a parellel object system using modules as the core components in python to allow for more flexible and better controlled attribiutes.

Awards and Achievements

Goldman Sachs: Awarded a scholarship and Engineering Spring week.

Imperial College London: Awarded the President's Scholarship to Imperial College London, given to the top 112 candidates that demonstrated the "highest academic excellence at interview".

Referees available upon request