

Emilian Joseph Bowry

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Education	Trinity College, University of Cambridge <i>BA, Engineering Tripos, 2020-2025</i>	Note: Degree awarded unclassified due to medical intermission preventing completion of Part IIB
	Judge Business School, University of Cambridge <i>Accelerate Cambridge, August 2022-July 2023</i>	
Experience	Software Developer Remote	AI Compatible August 2025 - Current

• **Regulatory Analysis Engine:**

- Adapted and improved state-of-the-art research on data extraction from privacy policies.
- Devised an unsupervised semantic equivalence detection model: This included topological data analysis, expectation-maximisation, suprathreshold stochastic resonance and other techniques, to identify legally equivalent statements. This led to me re-deriving a similar process to ‘Consensus Ensembles’ and the recently published technique of ‘Random k Conditional Nearest Neighbours’

• **Redeveloping full-stack website:**

- **Frontend:**
 - * Creating a dynamic background image generator to programmatically generate complex, ‘tilable’ background textures entirely on the client-side
 - * Creating a geometry engine to compose mathematically definable UI styles, including the capability to have seamless non-uniform backgrounds over disconnected, and unconventionally shaped UI components.
 - * Generalising the CSSTypes library to be able to create more complex, type-safe style objects.
 - * 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.
- **Backend:**
 - * 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 Luucid.tech
Cambridge August 2022 - October 2023

- 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

Monochrome: <https://github.com/emilbowry/monochrome>

Fork of the strict Black code-formatter. Using tabs and other slight formatting changes

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 applications of:

- Analysis tools like: K-means clustering, linear regression
- Statistical 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 Intraparietal 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 Bayesian 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 parallel object system using modules as the core components in python to allow for more flexible and better controlled attributes.

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