Emilian Joseph Bowry

07831799619 **emil.bowry@icloud.com** https://github.com/emilbowry

Education

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 — AI Compatible

Remote — August 2025 - Current

- **Regulatory Analysis Engine:**
  - Utilises Large Language Models for initial data extraction: Defining the output form using an OpenAPI schema object for consistently returned format for processing.
  - Improving and refining the Hader et al's methodology [DOI: 10.1007/s00607-024-01331-9] for a generative, and automatable process to gain more nuanced insight into privacy policy and reduce the amount of API calls.
  - Unsupervised semantic equivalence detection model utilises Baysian Inference, Topology, Linear Algebra, NLP techniques and Non-linear Systems analysis. Part of my system derived an analog for Random k Conditional Nearest Neighbours, a recently published technique for the classification of high-dimensional data.
- **Redeveloping full-stack website:**
  - Implemented a custom SVG-to-Bitmap rasterizer with memoization to render complex tessellations efficiently.
  - Created a Perturbation-Based Convergence Algorithm to detect and resolve oscillations caused by circular dependencies between content size and container constraints.
  - Derived a coordinate transformation system to map Non-Orthogonal Lattices onto Cartesian grids using affine transformations.
  - Utilised Dimensional Analysis to achieve area-invariant scaling across non-standard aspect ratios.
  - Modeled layout states as elements of the p2mg Wallpaper Group, proving isomorphisms between distinct stacking configurations to derive a unified $O(1)$ generation algorithm without iterative solvers.
  - Engineered a raw ISO 32000 Serialization Engine: that recursively maps JSON data structures into the PDF coordinate system.

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, using metaprogramming techniques to create a robust and adaptable framework.

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.

Projects and Additional Experience

Phasor Average Estimator: A Non-parametric, Recursive Bayesian Estimator that modelled event streams as a superposition of phasors, enabling instantaneous adaptation to periodicity shifts. It allows us to:

- Filter noise, jitter, and false positives via phase interference without requiring evidence accumulation windows.
- Normalise likelihoods via magnitude-weighted Phase Coherence, utilising the Triangle Inequality to guarantee a probability space $\in [0, 1]$ regardless of amplitude variance.
- Eliminate arbitrary exogenous hyperparameters via these natural geometric bounds.

Neural Data Analysis: Built an simulation framework for Lateral Intraparietal Cortex (LIP) neuron impulses, in order to analyse stochastic models The core objective was to evaluate and test different statistical models for varying models. The framework included:

- Modeled impulse dynamics using Stochastic Differential Equations (SDEs), benchmarking Hidden Markov Model (HMM) approximations to evaluate state-space tracking accuracy.
- Applied Bayesian Inference for parameter estimation and quantification of model mismatch, measuring the brittleness of theoretical models against empirical noise.

- Engineered a custom ETL framework to standardise heterogeneous scientific data formats, enabling centralized statistical analysis (e.g., Fano-Factor, PSTH) significantly faster than legacy lab methods.

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 knowledge graph inference engine reverse-engineered into the Obsidian Markdown Editor.

- Enforced Universal Properties (Categorical Products) to programmatically identify missing intersectional nodes between disjoint topics, automatically generating bridging notes.
- Modelled the relationship between Syntax and Semantics as an Adjunction (Galois Connection), guaranteeing that every grammatical title maps to a logical object.
- Applied the Yoneda Lemma to classify notes solely via their morphisms to specific 'Type Functors' (Definitions, Equations), enabling property inference without content parsing.

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. Used to prototype experementing with Kleen 3-VL and symmetrise or/and short circuiting.

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