

DEBANJAN RAY

MSc Advanced Computer Science | AI & Software Engineering

debanjan.ray@postgrad.manchester.ac.uk | Full right to work in the UK | [Portfolio](#) | [LinkedIn](#) | [GitHub](#)

EDUCATION

University of Manchester — MSc Advanced Computer Science 2026 – 2027

Modules: Data Engineering, Fundamentals of Machine Learning, Decision Making and Learning under Uncertainty, Symbolic AI

Newcastle University — BSc Computer Science, First Class Honours 2023 – 2026

Relevant modules: Computer Vision and AI (84%), Computer Systems Design and Architectures (85%), Foundations of Data Science (86%), Programming Portfolio 1 & 2 (82%, 92%), System and Network Security (77%)

Dissertation — LLM-driven research idea generation [Code](#)

- Built a pipeline that grounds Gemini 2.5 Flash in researchers' arXiv publication histories to test whether pairing authors from distant fields produces more novel research ideas.
- Scored ideas on five dimensions with an LLM judge; tested a domain-distance gradient with Mann–Whitney U, Kruskal–Wallis and Spearman correlation.

HACKATHON AWARDS

- **Best Use of Gemma 4 (MLH)** — Hacktoberfest Hack Day Manchester, Oct 2026, for dissPICable.
- **Best Use of Openloft and Applied AI Society Bradford Award** — Bradford Agentic AI Hackathon, Oct 2026, for Rhythm (only team to win two).

TECHNICAL PROJECTS

Bedrock — ICU early warning on IBM LinuxONE [Live demo](#) | [Code](#) | IBM Z Datathon 2026

- Led the frontend and demo video in a 5-person team. Five ML models score every ICU bed hourly and, on held-out patients, flag more deteriorations than NEWS2 at the same alarm rate.
- Redesigned a data-heavy dashboard into a ward floor plan a nurse can read in seconds; built the demo video in code (React, Remotion).

Agent Flight Recorder — time-travel debugger for LLM agents [Code](#)

- Built an observability tool (FastAPI, React, TypeScript) that records every step of an agent run so reasoning, tool calls, tokens and cost can be replayed, forked and compared; documented failure modes in a Limitations report.

Synthetic Usability Lab — parallel AI-persona website critique engine [Code](#)

- Three AI personas, including a screen-reader user given only the accessibility tree, browse a live site with Playwright and return ranked usability issues tied to screenshots; every element the model cites is validated against the page, so findings can't be invented.

dissPICable — AI rap-battle game [Code](#) | Best Use of Gemma 4

- Built in one day with a 3-person team: snap any object and Gemma 4 turns it into a character that rap-battles you, voiced by ElevenLabs, while the crowd votes from their phones (Node.js, Tone.js).

Rhythm — AI Beat Studio [Code](#) | 2 track awards

- Built in about 8 hours with a 4-person team: tap a beat on your phone and a local Gemma 4 producer turns it into a full track with drums, bass, synths and ElevenLabs vocals (Electron, Tone.js).

ADDITIONAL ACADEMIC PROJECTS

- **DevOps web app** — Flask + PostgreSQL with CI/CD, Docker and ELK logging. **Reliable file transfer** — reliable delivery over UDP with Java sockets.
- **Quiz platform (Java)** — led a 5-person team, 94.25% mark. **Secure Flask blog** — multi-factor authentication, rate limiting and access control.

LEADERSHIP

Treasurer — Newcastle University GameDev Society Aug 2025 – Sep 2026

- Planned nationwide society trips and competitive game jams, hosted talks and networking events with local game studios, and mentored students from non-technical backgrounds.

TECHNICAL SKILLS

Languages	Python, TypeScript, JavaScript, C++, C#, Java, Go, C, GDScript
AI / ML	Gemini API, Gemma 4 (Ollama), ElevenLabs, LLM evaluation, pandas, Matplotlib
Web & Frameworks	React, Next.js, Node.js, FastAPI, Flask, Tailwind CSS, Playwright, Electron
DevOps & Cloud	Docker, Git/GitHub, CI/CD, Vercel, Cloudflare Workers, ELK Stack, Linux/Bash
Databases	PostgreSQL, MySQL, MongoDB, Redis

ACHIEVEMENTS & INTERESTS

- **Verizon Cloud Platform Job Simulation** (Forge), Nov 2024 — designed a VPN product against cloud-native principles.
- **1st place**, 'In Search of Young Ruskin Bond' writing competition — story hand-selected by the author from 4,000+ entries.
- **Interests** — chess (represented Newcastle University against Durham), Manchester AI Society talks, game development.