VISHNU SANKARAKUMAR

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MSci Computer Science, University of Birmingham, UK

Completion: 2026. On track for First Class / high 2:1

A-LEVEL (2022): Computer Science A*, Physics A, Mathematics A, Extended project A*
IGCSE (2020): SIX A*, THREE A

Technical Skills :
Python, Java, C#, SQL, JavaScript, TypeScript, Blender, Unity

Experience

Studies: Shifted focus in final year to systems exploitation and advanced AI.

- **Cybersecurity:** practical binary exploitation, stack/ROP attacks, fuzzing, symbolic execution, and side-channel research. **TryHackMe** progression with **OSCP certification** goal.
- **Artificial Intelligence and Intelligent Systems:** deep learning with transformers, diffusion, autoencoders, and multimodal architectures, applied to vision, language, and generative tasks.
- **Additionally:** data/network analysis, multi-agent game theoretic dynamics, intelligent software engineering.

Chat Feature Dev Role - Application Tracking Web App (University of Birmingham, 2023)

- Led the design and implementation of the chat feature for an intern applications tracking web app for students. Ensured full accessibility and best practices in UI/UX design for diverse user needs.
- Developed a full vertical slice, using **Angular** front-end and **Spring Boot** back-end, with data persistence managed through **PostgreSQL** and **Spring Data JPA**.
- Aligned the feature with broader architecture seamlessly, largely eliminating bugs and latency.

Projects:

- Built an **LLM-centric policy auditor** (2025) that produces a prioritized issues list (contradictions, violations, loopholes) with verified citations. Simple UX *(React/Vite, Express/Node.js)* leveraging *OpenAI API*.
  - Implementing caching/idempotency reduced API costs by 20% and targeted prompt engineering eliminates false positives.
  - Requiring cited evidence eliminated hallucination, and recursive redaction passes over text ensured maximum coverage.
  - Added features catch ~80% of long-dependency issues, boosting overall tool reliability.
- Developed configurable **agent-based SIR epidemic simulator** (2025) to model infection spread and vaccination policies across network topologies. Tool enables Monte Carlo experiments to analyse dynamics under stochastic and risk-aware behaviours. Results align with Covid-era data and reinforce early health service intervention and mass vaccination. *(Python, Matplotlib).*
- Designed an **enhanced framework for bias evaluation** (2024) in predictive ML models, assessing the impact of changing protected attributes on predictions through statistical hypothesis testing and targeted search for discrimination. Introduced a threshold-based **Individual Discrimination Index** coupled with **Wilcoxon signed-rank tests** to quantify bias significance**,** achieving a **9× increase** in detected bias compared to random probing. *(TensorFlow, SciPy, NumPy, Pandas, Matplotlib).*

Work: Private Tutoring – A-Level/GCSE Computer Science (2025 onwards)

- Guiding and helping students to build confidence and master both theoretical and practical skills.
- Designing tailored lesson plans and long-term learning paths with achievable milestones, adapting to individual learning styles and difficulties.
- Long-term tutoring relationships fostered from effective, empathetic communication and leadership, leading to improvements in student outcomes by at least one grade.

Cognitive Science at Cornell University (August 2024) - Distinction:

- Studied the computational and neural foundations of perception, memory, and reasoning to understand AI as a form of cognition emerging from information processing. Applied these insights to develop adaptive, human-aligned AI systems, achieving top 5% performance in assessments.

Volunteering: Complete new library build for underprivileged school in rural Delhi, India (2020)

- Transformed a bare room into a functional library by cleaning, carpeting and building shelves and furniture.
- Catalogued and shelved over 3,500 books to create an accessible lending system and comfortable space for students.
- Strengthened teamwork, resilience and adaptability while contributing to a meaningful project for an underserved community under challenging conditions.