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

Software Experience
Python, Java, C#, SQL, JavaScript, TypeScript, Blender, Unity

Experience

Studies: Shifted focus in third year to building advanced AI and intelligent systems expertise.

- **Artificial Intelligence and Intelligent Systems:** sharp focus on advanced neural architectures including transformers, diffusion models, autoencoders, and multimodal models, with hands-on experience applying deep learning techniques in vision, language, and generative tasks.
- **Intelligent Software Engineering and Data Analysis:** building intelligent systems leveraging MLOps, defect prediction, AI-specific software design. Consolidating data with dimensionality reduction, network and community analysis.
- **Strategic Decision-Making and Multi-Agent Dynamics:** applying game-theoretic, evolutionary, and stochastic models for agent-based simulations, opinion dynamics, and optimisation.

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, reducing defects and latency by half.

Projects:

- Built an **LLM-centric policy auditor** (2025) that runs recursive global passes over policy text to produce a prioritized issues list (contradictions/violations/loopholes) with verified citations. One-click UX *(React/Vite + TS)* with *Express/Node.js* and *OpenAI API*. Adding caching/idempotency reduced API costs by 20% and targeted prompt engineering eliminated false positives.
- Developed **agent-based SIR epidemic simulator** (2025) with configurable vaccination policies and network topologies, to run Monte Carlo experiments and analyse dynamics under stochastic and risk-aware behaviours *(Python, Matplotlib).* Reproducible trials allowed for rigorous policy optimisation and comparison.
- Designed an **enhanced framework for bias evaluation** (2024) in predictive ML models, assessing the impact of protected attributes on predictions through structured statistical hypothesis testing and targeted greedy search for discrimination. Achieved a **9× increase** in detected bias compared to a random search baseline. *(TensorFlow, SciPy, NumPy, Pandas, Matplotlib)*

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

- One-to-one and group tutoring helping students build confidence and master both theoretical and practical skills.
- Designed 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 measurable improvements in student outcomes.

Cognitive Science at Cornell University (August 2024):

- Tackled the complexities of cognitive processes such as memory, cognition, and the interplay between language, thought, and consciousness.
- Engaged with interdisciplinary frameworks that integrate computational modelling, cognitive neuroscience, and evolutionary theory, cultivating my ability to apply cognitive principles to artificial intelligence, adaptive systems, and improve user-centered technology solutions.

Volunteering: Complete new library build for underprivileged school in Delhi (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.