**SOURAV SURYA MAJUMDER**

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**EDUCATION**

**University of Liverpool**  Liverpool, United Kingdom

*MSc in Data Science and AI* 2023-2024

Classification: Distinction

Relevant Coursework: Research Methods in Computer Science, Database and Information Systems, Programming Fundamentals, Math and Stats for Data Science and AI, Computational Intelligence, Machine Learning and Bioinspired Optimisation, Applied Artificial Intelligence, Data Mining and Visualisation, MSc Project

**Sister Nivedita University** Kolkata, India *MSc in Applied Mathematics* 2021-2023

CGPA: 9.02/10

Relevant Coursework: Discrete Mathematics, Graph Theory and Non-linear Dynamics, Numerical Analysis, Integral Transforms and Integral Equations, Basic Knowledge and Python Programming, Management Information System, Cryptography and Network Security, Optimisation and Operations Research, Machine Learning, Financial Mathematics and Bio-mathematics

**University of Calcutta** Kolkata, India

*BSc in Mathematics* 2018-2021

Relevant Coursework: Calculus, Geometry and Vector Analysis, ODE and Multivariate Calculus, C Programming Language, PDE and Multivariate Calculus, Scientific Computing with SageMath and R, Probability and Statistics, Linear Programming and Game Theory, Numerical Methods

**WORK EXPERIENCE**

**Data Science Theory and Applications Group, University of Liverpool** Liverpool, United Kingdom

**Research Collaborator** (June 2023-Present)

**Supervisor: Professor Vitaliy Kurlin**

* Developed and computed geometric descriptors for 50,000+ experimental and predicted crystal structures using Python and custom scientific packages
* Automated symmetry analysis using distance metrics to assess structural deviations
* Processed multi-structure simulated CIF datasets (T0, T1, T2, T2E) to extract atomic and molecular features; optimised parsing pipeline for large-scale input
* Processed and analysed 1017 simulated landscapes and 1M+ simulated molecular crystal structures
* Generated summary statistics and visual plots to correlate asymmetry measures with density, energy, packing efficiency, distance metric
* Contributed to research output for peer-reviewed publication on geometric properties of synthesisable crystals

**VOLUNTARY EXPERIENCE**

**University of Liverpool** Liverpool, United Kingdom

**Course Coordinator** September 2023-September 2024

* Elected to represent the academic and welfare concerns of over 400 MSc students in Staff-Student Liaison Committee (SSLC) meetings
* Compiled and analysed structured feedback across 8+ taught modules, presenting evidence-based reports to academic leads, which informed 3 departmental teaching improvements
* Collaborated with 5+ course-coordinators and school representatives to enhance course delivery and assessment flexibility
* Advocated for expanded teaching time in the Programming Fundamentals module, which initially had only 1 hour per week, resulting in a 50% increase in teaching hours from the next year
* Strengthened communication between students and staff, promoting a culture of transparency and mutual accountability in academic governance

**CONFERENCES**

* **Invited Talk:** Quantifying Continuous Asymmetry with Isometry Invariants

*MACSMIN 2025 – Mathematics and Computer Science for Materials Innovation*, 9–12 Sep 2025, University of Liverpool, UK (Hybrid)

Satellite event of the *35th European Crystallographic Meeting (ECM35), Poznań, Poland*

Organised by Professor Vitaliy Kurlin’s group and funded by the LMS through the Applied Geometry and Topology network

**SKILLS AND INTERESTS**

**Technical:** Python (NumPy, SciPy, pandas, matplotlib, scikit-learn, scikit-optimize, PyG), Reinforcement Learning, CCDC Python API, Crystallographic Information File (CIF) data processing, SQL, LaTeX, Git, Microsoft Office (Excel, Word, PowerPoint)

**Computational Expertise:** Geometric invariants, symmetry analysis, clustering, data visualisation

**Languages:** Bengali (native), English (fluent), Hindi (conversational), French (basic)

**Interests:** Geometric data science, machine learning and artificial intelligence, photography, literature

**PROFESSIONAL ACTIVITIES**

Materials Innovation Factory (MIF), University of Liverpool

MIF++ Seminar Participant, 2024 – Present

* Attend interdisciplinary seminars and research talks focused on advanced materials design, automation, and data-driven discovery
* Engage with cutting-edge topics in computational materials science, machine learning for chemistry, high-throughput experimentation