

SHWETA DEBJIT SARKAR

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Liverpool, United Kingdom

PERSONAL PROFILE & RESEARCH INTERESTS

I am an independent machine learning researcher with hands-on experience across a wide range of data types — clinical time-series, environmental and spatial data, large-scale behavioural cohorts, and ordered numerical sequences. Across four independent research preprints, I have worked on problems requiring careful handling of class imbalance, missing data, and model interpretability. My interdisciplinary background — combining an Electrical Engineering foundation in signal processing, probability, and optimisation, professional data analytics experience, and an MSc in Business Analytics from the University of Dundee — has given me both the mathematical grounding and the practical skills to work with complex, real-world datasets in any domain.

EDUCATION

- University of Dundee** **September 2024 – September 2025**
MSc Business Analytics and International Business *Dundee, United Kingdom*
 - Relevant modules: Machine Learning, Big Data Analytics and Predictive Modelling, Database Management, Statistical Methods for Business Intelligence, Deep Learning
 - Master's Thesis: *From Insights to Impact — Enhancing Retention and Monetisation in MoovBuddy through User Behaviour Analysis*; longitudinal cohort analysis of 100,000+ anonymised users across 10+ countries
- S.B. Jain Institute of Technology, Management & Research** **August 2015 – August 2019**
Bachelor of Engineering in Electrical Engineering *Nagpur, India*
 - Relevant modules: Signal Processing, Applied Mathematics, Probability and Optimisation, Network Analysis, Control Systems

PUBLICATIONS & PREPRINTS

P = PREPRINT

- [P.1] Sarkar, S.D. & Roy, S. (2026). *Machine Learning-Based Risk Factor Analysis for Cervical Cancer Prediction: A Comparative Study of Class Imbalance Handling Strategies with SHAP-Driven Clinical Risk Stratification*. Preprint, Zenodo. DOI: 10.5281/zenodo.19368694
- [P.2] Sarkar, S.D. & Roy, S. (2026). *A Mathematical Index for Quantifying and Reducing Student Depression Risk Through Personalised Behavioural Guidance*. Preprint, Zenodo. DOI: 10.5281/zenodo.19457072
- [P.3] Roy, S. & Sarkar, S.D. (2026). *Explainable Early Prediction of Acute Hypotensive Episodes in ICU Patients Using Routine Vital Signs: An eICU Study*. Preprint, Zenodo. DOI: 10.5281/zenodo.19161469
- [P.4] Roy, S. & Sarkar, S.D. (2026). *Local Bounded Stochastic Imputation for Ordered Numerical Sequences*. Preprint, Zenodo. DOI: 10.5281/zenodo.19429162

RESEARCH & PROFESSIONAL EXPERIENCE

- MoovBuddy Ltd** **May 2025 – August 2025**
Research Intern — User Behaviour Analysis (MSc Thesis Placement) *London, United Kingdom*
 - Conducted funnel analysis, cohort retention tracking, and RFM segmentation on anonymised behavioural data from 100,000+ users across 10+ countries using Python, Scikit-learn, Amplitude, SQL, and Power BI.
 - Independently identified an 88% install-to-subscription drop-off and analysed revenue contributions across countries, uncovering regional patterns in user conversion and monetisation.
 - Developed a four-phase retention roadmap in collaboration with my supervisor, which was shared with the marketing team and used to inform advertising and campaign strategy.
- Indothai Group** **December 2021 – March 2023**
Business Analyst *India*
 - Handled data across ticket sales, cargo, and passenger operations, pulling and cleaning reports daily using Excel and SQL for team and management review.
 - Managed data for over 300 customer interactions daily, identifying trends in service quality and sales performance through dashboard reporting.

TEACHING EXPERIENCE

- Dixons Fazakerley Academy** **January 2026 – Present**
Teaching Assistant — Mathematics, Science & Computing *Liverpool, United Kingdom*
 - Supported classroom delivery across Mathematics, Science, Computing, and Business in a mainstream school that also integrates students with special educational needs.

- Assisted students in preparing for GCSE and A-Level examinations and delivered targeted interventions for students requiring additional academic or behavioural support.
 - Collaborated with senior teachers to develop personalised study and development plans for students with diverse learning needs including autism, ADHD, and dyslexia.
- **Childwall Abbey School** **September 2025 – December 2025**
Teaching Assistant — Maths, Science & Computing *Liverpool, United Kingdom*
 - Supported students with mild to severe neurological disorders and special academic needs in a specialist school environment, adapting materials and approaches to individual learning profiles.
 - Assisted with coursework delivery and exam preparation for students with conditions including autism, ADHD, dyslexia, and other neurological needs.

SKILLS

- **Programming & Database:** Python (advanced), SQL, R (basic)
- **Statistical & ML Methods:** Logistic Regression, XGBoost, Random Forest, SVM, LSTM, Autoencoders, SHAP explainability, Class Imbalance Handling (SMOTE, ADASYN), Missing Data Imputation (MICE, KNN, custom), Survival Analysis, Cross-validation, Bootstrap
- **ML Frameworks & Libraries:** Scikit-learn, TensorFlow, PyTorch, Hugging Face Transformers, NumPy, Pandas, Matplotlib, Seaborn, SciPy
- **Tools & Platforms:** Jupyter, Git/GitHub, Google Colab, Docker, Power BI, Amplitude, Excel (Advanced)

CERTIFICATIONS & PROFESSIONAL DEVELOPMENT

- Introduction to Generative AI and Agents — Microsoft 2026
- Machine Learning Specialisation — DeepLearning.AI & Stanford University (Coursera) 2025
- Applied Data Science in Python — University of Michigan (Coursera) 2025
- Google Data Analytics Professional Certificate — Coursera 2025
- Academic Writing and Research — University of Leeds (Coursera) 2025

AWARDS & ACHIEVEMENTS

- Postgraduate Scholarship — University of Dundee, awarded for academic merit at MSc level 2024
- Second Place — First Semester Group Projects, MSc Business Analytics, University of Dundee 2024
- General Secretary — Inter-Departmental Forum, SBJITMR 2017–2019
- High Scorer in English — First Year Undergraduate, SBJITMR 2015

REFERENCES

Academic references available upon request.