SAHELI MAJUMDER

Email: sahelimajumder2004@gmail.com | +91 6290718056

SUMMARY

Interdisciplinary academic and AI/ML professional with a background in Mathematics, Computer Science, and Data Science, combining teaching and research experience in intelligent systems, biomedical AI, machine learning, and NLP. Currently serving as an Assistant Professor in Data Science, with experience in higher education, research, and AI-driven application development. Qualified UGC-NET (Computer Science & Applications) with a 99.22 percentile. Research interests include AI, computational biology, healthcare AI, and computational neuroscience, with a growing interest in computational approaches to understanding neural systems and brain function.

EXPERIENCE

- **St. Xavier's College(Autonomous), Kolkata**
  Assistant Professor, Postgraduate Department of Data Science| September 2026- Present

- **The Bhawanipur Education Society College**
  College Whole Time Faculty, **Department of Business Administration** | August 2026

  Delivered lectures on **Information Technology and its Applications in Business** to **BBA students**, covering fundamental IT concepts and their practical applications in business. Provided hands-on training in **managing, organizing, and analyzing business data using Microsoft Excel**, including practical data-handling and analysis techniques.

- **The National Vocational Academy of India**
  Lecturer | June 2026

  Delivered lectures on Artificial Intelligence in Finance for B.A. Economics students at Asutosh College and Research Methodology for B.A. English students at Bijay Krishna Girls' College.

- **Indian Association for the Cultivation of Science (IACS)**
  Research Intern | June 2025 – January, 2026

  Worked on histopathological image analysis and multi-class tumor classification using TITAN and CONCH in PyTorch. Built end-to-end pipelines for patch extraction, feature embedding, and slide-level aggregation on TCGA WSI. Performed preprocessing, dataset splitting, and EDA, and automated large-scale data workflows. Also analyzed genomic data (gene expression, mutations) from cBioPortal and validated research datasets for integrity and reproducibility.

- **God Grace Academy**
  Computer Science and Mathematics Teacher | October 2024 – May 2026

  Experienced educator to grades 6–10 math and coding educator skilled in Java, HTML/CSS, algorithms, project-based learning, and adaptive student assessments.

- **Leadership, Teaching & Outreach Experience**
  Administrative, Leadership & Outreach Experience | Aug 2022 – Jul 2025

  Worked on institutional documentation, outreach, event coordination, and fundraising initiatives at IIT Madras & social organizations (2023–2025); previously taught English

to Class 8 students at Ambuja Neotia Group, developing lesson plans and assessments (2022–2023).

EDUCATION

- St. Xavier's College (Autonomous), Kolkata- MSc in Computer Science | 2024–2026
- St. Xavier's College (Autonomous), Kolkata- BSc in Mathematics | 2021–2024
- IIT Madras- BS in Data Science and Programming | 2022–2028
- Jadavpur Vidyapith- Higher Secondary (Science) | 2019–2021
- Muralidhar Girls' School- Secondary Education | 2013–2019

SKILLS

• **Programming & Web:** Python, R, C, C++, Java, SQL, PL/SQL | HTML, CSS, JavaScript, JSP, PHP, React, FastAPI
• **ML & Data Science:** PyTorch, Pandas, EDA, data preprocessing, feature engineering, embeddings, model training & evaluation, data visualization
• **NLP & Biomedical AI:** NLP pipelines, topic modeling, sentiment analysis, biomedical literature analysis, medical image analysis, biomedical data handling
• **Tools & Deployment:** Git/GitHub, Vercel, Render

CERTIFICATIONS

- Application Modernization on IBM Z – IBM, 2025
- Bootcamp on Augmented Reality and Virtual Reality, Big Data Analytics , Blockchain – NIELIT, 2025, 2024
- Python for Data Science and AI – Coursera, 2024
- Sentiment Analysis using Python – Great Learning, 2024
- Web Scraping with Python – Great Learning, 2024
- Diploma in Software Application – Webel (WBEIDC), 2022

ACHIEVEMENTS

- Qualified **UGC-NET (Computer Science & Applications) for Assistant Professor and Admission to PhD** in the **December 2025** with a **percentile score of 99.22**.
- **Delivered an invited speaker session** on ***"AI-Driven Cancer Analysis: Exploring Genomic and Histopathological Dimensions"*** at the **1st AI4All Student-led Workshop** (Oct 2025), IITM BS also presented it *i*n Spectrum 2026, organized by Department of Physics, St. Xavier's College, Kolkata.
- **Presented** a research paper titled ***"Explainable AI for Credit Risk Assessment: A Comparative Study of TabNet, XGBoost, and FT-Transformer"*** at the **International Seminar on "Transforming Business Practices in a Changing Global Economy."**
- **Presented a paper** on "The effect of Principal Component Analysis on ML" in INFINITY 2024, organized by Department of Mathematics, RKMRC Narendrapur.
- 1st Place – Penchantment Creative Writing, RKMRC Narendrapur (2023) | 2nd Place – EM-Bleed Poster Making| 3rd Place – Extempore, St. Xavier's College (2025, 2024)
- **Recipient of multiple Memorial Prizes** —for **securing highest marks in Madhyamik (2019)** and **subject-wise excellence** in **Mathematics, History, Physical Science, and Bengali**.
- Achieved **AIR 1599** in **GATE Mathematics 2024** (General category).

SCHOLARSHIPS

- Dr. Reddy's Foundation Sashakt Scholarship | Swami Vivekananda Merit-cum-Means Scholarship- Government of West Bengal | Udayan Shalini Fellowship

PROJECTS

- **Deep Learning-Based Intelligent Malware Detection System**
  Python | *PyTorch* | *LightGBM* | *CatBoost* | *FT-Transformer* | *Flask* | *MongoDB*

- Led a team to design and develop a scalable malware detection system on a **500K-sample dataset with 84 features**
- Implemented and evaluated **deep learning architectures and ML models** using **5-fold cross-validation**
- Built pipelines for **data preprocessing, feature engineering, and model training**
- Engineered domain-specific features to improve model performance.
- Achieved **ROC-AUC ≈ 0.72** with stable generalization across validation folds
- Contributed to overall system design for **malware detection system using Flask and MongoDB**

- **Medical Literature Analyser**
  Python | *FastAPI* | *React* | *PubMed API* | *NLP* | *Recharts* | *Vercel* | *Render*
  - Built a full stack biomedical research tool querying 36M+ live PubMed papers via NCBI Entrez API
  - Developed REST API endpoints in FastAPI for real-time search, publication trend analysis, and NLP processing
  - Implemented NLP pipeline for topic clustering, keyword frequency extraction, and sentiment trend analysis across years - Engineered React frontend with interactive visualisations — trend chart, keyword bar chart, and sentiment line chart
  - Deployed end-to-end on cloud infrastructure (Render + Vercel) with environment-based API configuration
  Live: medical-literature-analyser.vercel.app
  GitHub:github.com/sahelimajumder01/medical-literature-analyser