

DEBANSHU BANERJEE

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Profile Highlights: Machine Learning | Generative AI | Information Systems

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EDUCATION				
Examination	University/Board	Institute	Year	CGPA / Percentage
Fellow Programme in Management (FPM): Information Systems	Indian School of Business	Indian School of Business	August 2026 - Present	
Bachelor of Engineering (Metallurgical Engineering)	Jadavpur University	Faculty of Engineering & Technology	2022	8.57 /10 (80.63 %) First Class Distinction
Secondary School	Central Board of Secondary Education	DAV Model School, Durgapur	2017	90.00 %
Primary School	Council for the Indian School Certificate Examinations	St. Xavier’s School, Durgapur	2015	93.83 %

WORK EXPERIENCE

ZS Associates

Pune, India

Business Technology Solutions Associate

September 2024 – January 2025

- Deployed an end-to-end data pipeline integrating Databricks Model Serving Endpoints with a GPT-based interface enabling low-latency access (approximately 5 seconds) to enterprise drug databases.
- Developed a Generative AI framework using Databricks AI/ BI Genie Space to automate Structured Query Language-based querying to navigate these databases for compositional analysis of drug molecules, investigating structure-property relationships to optimize drug performance.

Tata Steel Limited

Jamshedpur, India

Manager, Processing & Supply Chain (Industrial By-Product Management Division)

July 2023 – August 2024

- Led the development of a data-driven scrap inventory and logistics optimization system, leveraging operational data analytics to improve heavy vehicle deployment and scrap recycling efficiency in alignment with sustainability goals.
- Integrated computer vision-based monitoring systems for real-time tracking of personnel, equipment, and vehicle movement, enabling AI-driven safety interventions in industrial environments.
- Executed auctions for unprocessed scrap, ensuring fair price discovery based on scrap chemistry (ferrous or non-ferrous) and subsequent sales, generating revenue of 1500 INR crores in the financial year 2025.

Management Trainee Technical

July 2022 – June 2023

- Analyzed and monitored temperature gradients across coke oven batteries to control coking kinetics and heat distribution to ensure minimized sulfur content in the produced coke.
- Implemented laser-based inspection of pinch rolls in Hot Strip Mill operations to assess roll condition, minimize surface damage, and enhance surface integrity of hot-rolled steel products.

RESEARCH PUBLICATIONS

A New Wrapper Feature Selection Method for Language-Invariant Offline Signature Verification 🌐
Journal: Expert Systems with Applications
Dimensionality Reduction of the signature images using Singular Value Decomposition, followed by subsequent feature engineering using Binary Red Deer Algorithm, followed by Naïve Bayes classification to differentiate between actual and forged signatures.

A Two-Tier Ensemble Approach for Writer-Dependent Online Signature Verification 🌐
Journal: Journal of Ambient Intelligence and Humanized Computing
Ensembles involving variations of Naïve Bayes, Random Forest, and Support Vector Machine classifiers for signature verification.

Materials Informatics and Polymer Science: Pushing the Frontiers of our Understanding 🌐
Journal: Matter
This work is a preview of predictive and generative machine learning models, which are applied to polymer datasets to correlate chemical structure with their glass transition temperatures, thereby leading to the discovery of new high-temperature polymers.

Comparing Transfer Learning to Feature Optimization in Microstructure Classification 🌐
Journal: iScience

Comparison of image classification results between transfer learning on VGG 16, Inception V3, and Xception architectures and feature optimization using meta-heuristic algorithms, thereby identifying dendritic and non-dendritic microstructures of various meta

Z-Transform-Based Profile Matching to Develop a Learning-Free Keyword Spotting Method for Handwritten Document Images 🌐

Journal: International Journal of Computational Intelligence Systems

Generation of a profile matching technique using Bezier Transformation, followed by creation of multiple orientations of the generated profile using Affine Transformation and comparison of the profiles of the query word and the entire pool of words using Z-transformation to develop a novel learning-free keyword spotting algorithm for handwritten document images.

Rectification of Camera-Captured Document Images Using Component Analysis 🌐

2020 IEEE Calcutta Conference (CALCON)

Eradication of perspective distortion from camera-captured document images using Homography Transformation.

INTERNSHIPS

Mitacs Globalink Research Internship **Montreal, Canada**

Ecole de Technologie Superieure **June 2021– August 2021**

Developed a Python library using the concept of Digital Image Correlation for detecting the initiation and growth mechanisms of microcracks and other related damage features in fibre-reinforced composites (predominantly used to build aircraft) owing to local stress-strain fields. 🌐

Tata Steel Limited (Formerly Tata Steel BSL) **Meramandali, India**

Department of Cold Rolling Mill **May 2021– July 2021**

Study of the parameters involved in annealing of steel and determining the optimum values of these parameters based on different steel chemistries.

POSITIONS OF RESPONSIBILITIES

Peer Reviewer

Journal: International Journal on Document Analysis and Recognition (3 Reviews) **June 2026**

Journal: Discover Computing (2 Reviews) **January 2026 – June 2026**

Journal: Discover Artificial Intelligence (1 Review) **May 2026**

Journal: Machine Learning (1 Review) **January 2026**

Journal: Computational Materials Science (3 Reviews) **November 2022 – June 2023**

Placement Coordinator (Training & Placement Cell, Jadavpur University) **July 2021 – May 2022**

Student Representative of the Career Services team helping peers land job opportunities before completion of their degrees.

EXTRA CURRICULAR ACTIVITIES

Outdoor Leadership Course (by Tata Steel Adventure Foundation) **April 2023**

Trek to the Mudga Top of the Himalayas at a height of 11,400 feet above sea level.

Steel Challenge 17 (Organized by Steel University) **November 2022**

4th rank in the Asia West region for producing optimal quality steel complying with environmental standards using an electric arc furnace simulator
