SOMPARTHA SINHA

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EDUCATION

JADAVPUR UNIVERSITY 2023-2027
Bachelor of Engineering in Construction Engineering **CGPA-8.0/10**

IIT MADRAS 2023-2027
Bachelor of science in Data Science and Applications **CGPA-9.0/10**

EXPERIENCE

AI/ML Intern
GrowGlobal • Supervised by Mr. Anirban Roy
Feb 2025 – June 2025

- Engineered a high-performance CAPTCHA-solving system in PyTorch, achieving >97% character-wise accuracy across real + synthetic datasets.
- Architected a CRNN model with CTC loss and custom CaptchaDataset class to efficiently manage variable-length, multi-character labels.
- Augmented training data using rotation, distortion, and noise to boost model generalization on diverse CAPTCHA types.
- Deployed the trained model via a Flask API and integrated it into a Chrome Extension for sub-100ms real-time solving.
- Optimized model performance through hyperparameter tuning, synthetic data generation, and custom label encoding.
- Recognized as “Best Intern” for delivering high impact contributions to automation workflows..

Research Intern — Indian Statistical Institute (ISI), Kolkata
Under Prof. Agnimitra Biswas, mentored by Ankit Lodh | Ongoing Project
June 2025 – Present

- Developing an ML-driven crop yield prediction pipeline using environmental indicators like rainfall, temperature, and reservoir data.
- Analyzing historical trends to forecast crop-specific yields across regions and timeframes.
- Consolidated fragmented crop-wise datasets into a unified format to facilitate multi-level feature engineering and exploratory analysis.
- Evaluated multiple models (Random Forest, etc.) by comparing state-wise and crop-wise strategies with and without log scaling.
- Executed year-wise testing to benchmark predictive accuracy using historical validation.
- Refined input distributions via log scaling and encoded state-level variability to improve robustness.

SKILLS

Languages	Java, C++, python, C
Expertise	Data Structure and Algorithm(DSA), Problem Solving, Competitive Programming(CP)
Coursework	SQL, Bash Shell, Object-Oriented Programming, Tableau, Power BI
Databases	PostgreSQL, MySQL, MongoDB
Web Development	HTML, CSS, JavaScript, TypeScript, Flask, Django, Node.js, Vue.js, React.js,Tailwind CSS
Operating Systems	Windows, Ubuntu, Kali Linux
Machine Learning	ML Algorithms, scikit-learn, Fine-Tuning Large Language Models (LLMs)

CERTIFICATION

- **Cloud Computing** by IIT Kharagpur on NPTEL(certificate)
- **Investment Banking** by 365 Financial Analyst(certificate)
- **Financial Market** by Yale university(ongoing)

PROFILES

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PROJECTS

Stock Analyzer – JavaFX Desktop App for Real-Time Stock Tracking (GITHUB LINK)

- Engineered a feature-rich desktop application using JavaFX to streamline real-time stock tracking for NSE/BSE-listed companies.
- Orchestrated seamless integration with the Alpha Vantage API to retrieve live stock prices and 7-day historical data with minimal latency.
- Designed an interactive and user-friendly interface featuring search capabilities, real-time price updates, and dynamic LineChart visualizations.
- Implemented robust JSON parsing with Gson to ensure accurate rendering of live financial metrics and error resilience.
- Demonstrated end-to-end real-time financial data flow and empowered users with actionable market insights through an intuitive GUI..

Capstone Project: Business Data Management (Hashtago Digital Marketing Company) (GITHUB LINK)

- Extracted and audited raw invoice and sales data to uncover patterns in revenue generation, payment delays, and client retention.
- Devised interactive dashboards in Tableau and Power BI to visualize KPIs like payment timelines and retention metrics—reducing overdue invoices by 20%
- Architected predictive models to forecast sales and customer churn, enabling the business to enhance retention and optimize cash flow.
- Elevated operational efficiency by 15% by translating data insights into strategic decisions for sales optimization and debt recovery.

Built My Own Linear Regression Model from Scratch (GITHUB LINK)

Python, NumPy, Gradient Descent, California Housing Dataset

- Constructed a fully functional Linear Regression algorithm using NumPy, bypassing pre-built ML libraries to strengthen theoretical understanding.
- Programmed gradient descent from scratch to optimize model weights, achieving accurate convergence on the California Housing dataset.
- Illustrated training dynamics by plotting cost function reduction over epochs and evaluating results using RMSE, MAE, and R^2.
- Reinforced concepts in linear algebra, optimization, and model evaluation—laying a strong foundation for future work in machine learning.