Induj Tyagi

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Education

Indian Institute Of Technology Jammu *Aug 2024 – Mar 2028*
B Tech. in Mechanical Engineering *(expected)*

- CGPA: 8.1/10
- **Coursework:** Computer Architecture, Comparison of Learning Algorithms, Computational Theory

Projects

Aistox: AI-Driven Stock Prediction Platform

- **Architecture & Performance:** Engineered an ensemble pipeline integrating financial fundamentals, technical indicators, macroeconomic data, and real-time sentiment analysis from 15,000+ news sources.
- **Predictive Accuracy:** Achieved 81.7% directional accuracy across 500+ equities with a Sharpe ratio of 1.52 using transformer-based natural language processing.
- **Sentiment Engine:** Deployed a real-time BERT sentiment analysis engine achieving a 94.3% F1-score while processing 50,000+ social media posts per hour.
- **Technology Stack:** Python, TensorFlow, scikit-learn, NLTK, Redis, Alpha Vantage API.

Customer Segmentation via Unsupervised Learning

- **Data Analysis:** Applied K-Means clustering and Principal Component Analysis on 12,000+ customer records with 43 behavioral and demographic features.
- **Clustering Results:** Identified 6 optimal customer segments with 87.4% variance explained by the top 11 principal components.
- **Business Impact:** Enhanced Customer Lifetime Value (CLV) prediction accuracy by 42.6% and achieved a 3.2x improvement in targeted marketing campaign conversions.
- **Technology Stack:** Python, scikit-learn, pandas, matplotlib, seaborn.

Cryptographic Digital Signing Application

- **Security Implementation:** Built an RSA-2048 and SHA-256 based digital signing system with an intuitive drag-and-drop interface for real-time document verification.
- **Performance Optimization:** Enabled client-side cryptographic operations with an average signing time of 40ms while maintaining zero private key exposure.
- **Verification Success:** Verified 75,000+ documents with 99.94% accuracy in signature integrity validation.
- **Technology Stack:** JavaScript, Node.js, Express.js, Web Crypto API.

Privacy-Preserving Blockchain Systems *In Development*

- **Privacy Technologies:** Developing blockchain-based systems incorporating differential privacy, zero-knowledge proofs, and homomorphic encryption protocols.
- **Research Focus:** Targeting decentralized, privacy-compliant machine learning applications over sensitive genomic datasets.
- **Technology Stack:** Rust, Solidity, ZK libraries, differential privacy frameworks.

Technologies

Languages: C++, Rust, Python, JavaScript, Solidity

Machine Learning & Data Science: NumPy, Pandas, scikit-learn, TensorFlow

Blockchain Development: Ethereum, Solana, IPFS, Hardhat, Anchor

Tools & Platforms: Git, Docker, VS Code, Vim, Linux, Figma