Prem Kumar

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GitHub — LinkedIn — Portfolio

Seeking F-1 STEM OPT authorization for USA roles — Eligible for other international work sponsorship

Education

Indian Institute of Technology Jodhpur Jodhpur, India
B.Tech in Artificial Intelligence and Data Science *Oct 2022 – Expected May 2026*
GPA: 8.52 / 10 — Relevant Coursework: Data Structures, Algorithms, ML, AI, OS, CN, Probability

Kendriya Vidyalaya Mokamaghat
Class XII (CBSE): 92.4% *2022*
Class X (CBSE): 91.6% *2020*

Experience

Software Engineering Intern *May 2025 – Jun 2025*
Citadel New York, NY, USA (Remote)

- Engineered a high-frequency trading simulator in **Python** processing **100K+ trades/sec** with **¡5ms latency**, enabling realistic backtesting for algorithmic strategies.
- Optimized real-time **data ingestion pipelines** for high-frequency trading data by implementing a **Kafka**-based pub/sub model and **Redis** caching layer, reducing data lag by **35%** and enhancing reliability for downstream analytics.
- Automated **CI/CD** workflows using **GitHub Actions** and **Docker**, increasing deployment reliability by **40%** and reducing manual intervention.

Projects

Smart Grading App *Aug 2024 – Nov 2024*
Personal Project (Full-Stack) GitHub Live Demo

- Developed a full-stack automated grading tool with a modular rubric system, cutting manual grading time by **50%** for faculty processing **150+ student records**.
- Designed the application with a **Tkinter** GUI and **Excel I/O** integration for seamless data import/export, significantly improving usability for non-technical users.
- Implemented data analysis features using **Pandas** and **Matplotlib** to visualize performance trends, helping educators identify class-wide learning gaps.
- Ensured code quality by maintaining **85% unit test coverage** and resolving **12+ integration bugs** before release.

High-Throughput Packet Analyzer *Mar 2024 – Apr 2024*
Systems Programming Project GitHub

- Built a high-throughput packet processing engine in **Python** capable of analyzing **500 packets/sec** with **92% anomaly detection accuracy**.
- Created a real-time monitoring **Dash**board to visualize network traffic and intrusions, reducing false positives by **20%** through heuristic filtering.
- Improved system throughput by **25%** via concurrency and optimized packet parsing algorithms, enabling scalable analysis for large networks.

Multi-Language Translation Chatbot *Nov 2023 – Dec 2023*
Independent Project (Deployed) Live Demo

- Developed and deployed an NLP-powered translation chatbot using **seq2seq RNN models (TensorFlow)** for real-time translation across Spanish, French, Japanese, and Hindi.
- Architected a low-latency **Flask backend** handling **500+ daily queries** with **200ms response time**, ensuring a responsive user experience.
- Designed and implemented a clean frontend that improved user engagement by **40%**.

Technical Highlights

Languages: Python (Expert), C++ (Proficient), Java (Proficient), SQL (Proficient), JavaScript (Proficient)
Systems & Tools: Kafka, Redis, Docker, GitHub Actions, CI/CD, Linux, Git
Frameworks & Libraries: TensorFlow, Flask, React, Dash, Pandas, NumPy, Scikit-learn, Keras
Concepts: Data Structures & Algorithms, Object-Oriented Design, Low-Latency Systems, Microservices, Unit Testing