

Krishna Lalprasad Sharma

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WORK EXPERIENCE

Software Engineer | Indiana University

Jan 2025 – Jul 2025

- Designed and deployed **Azure-based Computer Vision pipeline** in **Python** combining SLEAP, YOLO, and Keypoint MoSeq to track multi-animal behavior and object interactions in rodent studies.
- Integrated **Azure OpenAI with LangChain** to engineer an autonomous **analysis agent** that extracts behavioral metrics (e.g., thigmotaxis) and generates structured summaries by correlating CV outputs with scientific literature via RAG.
- Developed interactive query agent, enabling researchers to ask natural language questions about experimental results and receive context-aware insights based on precomputed analysis.
- Scaled full pipeline on Azure to **process 200+ hours of video**, reducing manual review time by 60% and improving reproducibility through automated documentation and insight generation.

Software Engineer Intern | PrimaThink Technologies Pvt. Ltd

Jun 2022 – Dec 2022

- Engineered **video upload pipeline** using **AWS S3** pre-signed URLs with **React** and **TypeScript**, enabling 50+ educators to upload content with 15% faster processing.
- Automated multi-device streaming via **AWS Lambda**-triggered MediaConvert (FFmpeg) HLS transcoding, reducing playback buffering and eliminating format compatibility issues by 27%.
- Dockerized **Node.js** analytics backend with **DynamoDB** and Elasticsearch to record video playback events and generate educator-facing insights, processing **5,000+ daily engagement logs**.
- Implemented **CI/CD pipelines using Jenkins** to automate testing(Jest), Docker image builds, and deployment of video processing and analytics services.

Frontend Developer Intern | SkrapNest

Jan 2021 – May 2021

- Constructed **dashboard using React.js** to visualize real-time scrap pricing trends and user activity, leveraging **Django REST API** with scheduled polling for live updates to customers.
- Refined real-time pricing API by implementing **PostgreSQL indexing** and **Redis caching**, reducing query response times for fetching the latest scrap prices at peak traffic by 43% and enabling instant dashboard updates.
- Boosted user engagement by 5% by implementing price drop alerts using Simple Email Service.

PROJECTS

RentalMentor | Next.js, FastAPI, OpenAI, LangChain, MongoDB, WebSocket

- Developed AI-powered **rental advisory chatbot** with Next.js frontend and FastAPI backend, enabling users to seek rental guidance, neighborhood insights, and lease agreement explanations through **persona-driven agentic interface**.
- Integrated **LangChain with OpenAI APIs** for intelligent query handling, document summarization, and personalized advice, implemented WebSocket for real-time chat, and reduced average user query **response time from 3.2 sec to 1.8 sec**.

WriteSync | React.js, Node.js, gRPC, WebSocket

- Developed a **real-time collaborative** text editor with React frontend and Node.js backend, utilizing **gRPC** streaming for efficient document synchronization across clients and supporting up to 100 concurrent editing sessions with sub-50ms average sync latency.
- Enabled **multi-user editing** with WebSocket-based live collaboration and minimal latency communication between clients and server, incorporating lightweight user presence tracking for enhanced collaboration experience.

Secure Banking System (SBS) | React.js, Express.js, Node.js, Tailwind, Material-UI

- Devised FinTech platform for credit, withdrawal, and transfer transactions using **React and Node.js**, featuring role-specific dashboards and secured with **NGINX reverse proxy** for request routing and rate-limiting.
- Mitigated fraudulent transactions by using Multi-Factor Authentication (MFA), JWT-based authentication, and role-based access controls (**RBAC**).

EDUCATION

Master of Science in Computer Science — Indiana University Bloomington

May 2025

Bachelor of Engineering in Computer Engineering — University of Mumbai

May 2023

TECHNICAL SKILLS

Programming Languages: Python , C , Java, TypeScript

Web Technologies: React, Redux, Next.js, Node.js, Tailwind, Django, FastAPI, Bootstrap, Material UI.

Database & Cloud: SQL, MongoDB, GraphQL, Elasticsearch, AWS, Azure.

Other Technologies: Apache Spark, Kafka, RabbitMQ, ESLint, Docker, gRPC, Git, Redis, Hadoop, Jenkins, Jira, SQLAlchemy, LangChain, Kernel, Streamlit, Unix/Linux, Visual Studio, Nginx, Selenium, Cursor.

Software Engineering: Agile, Software Development Life Cycle, Test Driven Development, Microservices.