Shivaprasad Gowda

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EDUCATION

Indian Institute of Information Technology (IIIT), Nagpur 2024 – 2028
B.Tech in Computer Science & Engineering (Specialization in AI & ML) *CGPA: 9.02*
- Relevant Coursework: Data Structures & Algorithms, Linear Algebra, Calculus for Data Science, Probability & Statistics, Conversational AI, Deep Learning Theory.

Prerana PU College, Belagavi, Karnataka 2022 – 2024
Pre-University College (PUC) - 11th & 12th *12th Boards: 95.6%*
Sant Meera School, Belagavi, Karnataka Till 2022
Secondary School Leaving Certificate (SSLC) *Score: 99.36%*

PROFESSIONAL EXPERIENCE

FOSSEE, IIT Bombay Dec 2025 – Present
AIML Intern (Chemical Engineering Domain)
- Built predictive models for industrial chemical processing, precisely targeting Naphthenes, Aromatics, and Paraffins composition.
- Architected a deep-learning regression suite achieving 96% precision, serving as a "Virtual Sensor" alternative to expensive laboratory chromatography and reducing composition estimation time by 90%.

ElevateTrust.AI Mar 2025 – June 2025
ML & Computer Vision Intern
- Engineered a real-time computer vision system using YOLOv8 and ByteTrack to automate item counting in warehouse environments, reducing human manual counting errors by 18%.
- Created a Streamlit interface for live RTSP stream processing, implementing custom zone-detection logic to track "loaded" vs "unloaded" assets in real-time.
- Recognition: Warehouse automation project featured by the official YOLOvX Community (56k+ followers).

RESEARCH & LEADERSHIP

Deep Learning Research Intern, IIIT Nagpur May 2025 – July 2025

- Architected RANGE-GAN: A deep residual GAN for multi-channel EEG signal synthesis; integrated WGAN-GP and Spectral Normalization to stabilize training and prevent mode collapse.
- Achieved a Mean Fréchet Distance (FD) of 0.2435, outperforming the YARE-GAN benchmark by 20% in capturing non-stationary temporal dependencies.
- Conducted an ablation study demonstrating that increasing residual depth is 14% more effective than self-attention for high-fidelity signal reconstruction in this domain.

Head of AIRA (AI Research & Applications), CRISPR IIITN Aug 2025 – Present

- Founded and lead the AI research domain; delivering technical AI sessions to 600+ students and overseeing the technical roadmap for 60+ core members.
- National Hackathon Lead: Organized and chaired the Claude Solvathon; mentored 70+ student teams in LLM orchestration and Generative AI deployment.

INDEPENDENT RESEARCH

Single-Author Research Project
Shivaprasad Basavaraj Gowda
- Conducted large-scale experiments (15,000+ runs) on deep learning models including MLPs, CNNs, Vision Transformers, and GPT-2 to analyze training stability and representation quality.
- Identified a key failure mode in deep networks (Destructive Rank Collapse), explaining why residual connections are critical for effective learning even when normalization is used.
- Used spectral analysis and rank-based metrics to study model capacity utilization, providing practical insights for designing stable and scalable neural network architectures.
- Paper submitted to a conference (name undisclosed due to rules); preprint link will be added once it clears preprint server moderation.

Selected Projects

RxStruct-Gemma: Clinical Entity Extraction | *Unsloth, Gemma-3-1B, LoRA* | [GitHub](#)
- Fine-tuned Gemma-3-1B-IT on a local RTX 3050 (6GB VRAM) utilizing Unsloth & WSL2; achieved a 22% accuracy improvement over traditional NER (SciSpacy) for conversational medical parsing.
- Engineered a synthetic dataset pipeline via Claude 3.5 Sonnet to generate context-aware clinical dialogues; optimized model via 4-bit GGUF quantization for low-latency local execution.
- Built a post-processing validator that converts unstructured dialogue into structured JSON, reducing downstream system errors by 40%.

Stroma-RAG: Dual-Mode Document Intelligence | *LangChain, PostgreSQL, Pinecone* | [GitHub](#)
- Architected a production-ready RAG system featuring a stateful service for persistent bank/loan document knowledge and a stateless webhook for on-the-fly PDF processing.
- Implemented Parent-Child Chunking and Semantic Section Splitting, improving Top-K retrieval recall by 35% for complex, multi-page financial documents.

Campus-RAG: Institutional Knowledge Engine | *FastAPI, Jina Embeddings, Gemini*
- Designed and deployed a RAG system serving the IIITN student body for campus-related Q&A; reduced manual search time by 70% and handles 500+ queries daily with context-aware responses.

CuPy Neural Engine from Scratch | *Python, CuPy, GPU-Accelerated* | [GitHub](#)
- Constructed a complete deep learning framework from first principles leveraging CuPy for GPU-accelerated tensor operations, achieving a 12x training speedup over CPU-based NumPy implementations.
- Implemented Backpropagation, Adam Optimizer, and Dropout, achieving 98.17% Test Accuracy on MNIST.

Technical Skills

Languages: Python (Expert), C++, C, JavaScript.
Frameworks/Libraries: PyTorch, TensorFlow, Unsloth, LangChain, HuggingFace, FastAPI, Scikit-Learn, CuPy.
Tools/Deployment: Docker, WSL2, Git/GitHub, Railway, Streamlit, Pinecone, VS Code, Google Colab.

Achievements

Finalist, UpStart Entrepreneurship Event – IIT Kanpur
2nd Place, Machine Learning Hackathon – SITNovate (Symbiosis Institute of Technology)