

ADAPALA MANI KUMAR

Bangalore, India

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OBJECTIVE

Fullstack AI/ML Engineer & Data Analyst with 3+ years of experience designing, developing, and deploying end-to-end AI solutions and data-driven applications. Skilled in building and fine-tuning of advanced AI models, including LLMs, OCR, ASR, NMT, and TTS systems, and delivering them securely via Flask APIs and Power BI dashboards for actionable business insights. Experienced in large-scale model development and remote workflows using high-performance NVIDIA DGX systems, as well as containerizing and deploying AI solutions with Docker for scalable, robust production environments. Looking for a full-time role in AI/ML Research Engineering to leverage cutting-edge technologies and drive innovation through intelligent automation.

EDUCATION

Master of Technology in AIML, Specialized in Deep Learning BITS Pilani University, Pilani, India	2024 - 2026 Grade: 7.82 / 10
Bachelor of Technology in Computer Science, Specialized in AIML SRM University - AP, Amaravati, India	2019 - 2023 Grade: 9.08/ 10

SKILLS

Programming Languages	Python, SQL, Bash
AI & ML	Machine Learning, Deep Learning, Generative AI (GenAI), Large Language Models (LLM), Natural Language Processing (NLP), Computer Vision (CV), Image Processing
AIML Frameworks	TensorFlow, PyTorch, Keras, Transformers, ONNX, TensorRT, Triton Inference Server, NLTK, Lang Chain, LlamaIndex, Streamlit, Scikit Learn
Models (DL & LLMs)	YOLO, Detectron, NeMO, Swin, TrOCR, Gemma, Llama, Qwen, CodeGemma
Data Science & Analytics	Feature Engineering, Exploratory Data Analysis, Power BI, Data Visualization
Backend Development	REST APIs with Flask API & Fast API, API Authentication (JWT, API Keys, Basic Auth), Microservices Architecture
Databases	MS SQL Server, MongoDB, Vector Databases
LLMOps	vLLM, LMDeploy, SGLang, LiteRT, Ollama, llamacpp, MCP
Software & Tools	Docker, Git, Linux, Postman, Amazon S3
High Performance Computing	Remote Development, Distributed Model Training via NVIDIA DGX Systems
Research Interests	Vision Computation, Neural Language Models

EXPERIENCE

AIML Research & Development Engineer GormalOne LLP	Aug 2023 – Present Bangalore, India
End-to-End AI/ML Solution Delivery: Spearheaded the development and deployment of innovative AI solutions, including patented OCR models, large-scale multilingual RAG systems, and AI-driven content moderation platforms—applying vision, NLP, and generative AI for real-world business impact. Scalable Model Deployment: Expertly containerized and deployed advanced AI models on GPU-enabled Linux and NVIDIA DGX systems via Docker, ensuring robust and high-performance execution across diverse production environments. Multimodal & Multilingual Innovation: Developed integrated solutions that combine computer vision, speech, and language technologies to deliver domain-specific multilingual capabilities for real-time dairy analytics. Research and Technical Leadership: Drove AI innovation through patented algorithms and white paper publications, translating advanced research in computer vision, NLP, and generative AI into operational products for business.	

- **Key Achievements:** Consistently delivered production-grade scalable AI/ML solutions that exceeded accuracy and efficiency benchmarks, bridging cutting-edge research with impactful industry deployment with digital safety.

Data Science Intern
GormalOne LLP

Jul 2022 – Aug 2023
Bangalore, India

- Developed secure automated *ETL APIs using Flask & JWT* to streamline cross-database data migration with scheduled trigger-based execution.
- Contributed multiple dashboards and reports to Dairylytics, a *Power BI* driven analytics platform that transforms dairy data into actionable insights for smarter, data-driven decision-making.

AML Intern
HexnBit

Jun 2021 – Jul 2021
Virtual

- Analyzed the dataset and classified the given wheat seeds as one of the three types of seeds using various Machine Learning Algorithms for the project Wheat Seed Classification using AIML with an accuracy of around 98%.

PROJECTS

SSR – Multistage OCR Framework - {Intellectual Property: Patent Granted}

- **Developed and Patented** a novel **Optical Character Recognition (OCR)** architecture utilizing a proprietary ensemble pipeline that integrates **Computer Vision** for spatial feature extraction with advanced **Natural Language Processing** techniques for semantic error correction.
- Engineered a high-performance inference engine, achieving a **90% reduction in latency** (from 60 seconds to under 3 seconds) by implementing multi-threaded parallel processing and leveraging NVIDIA inference compilers for accelerated GPU runtimes.
- Leveraged sequence-to-sequence modeling and linguistic heuristics to **boost recognition accuracy by 70%**, effectively resolving ambiguities in degraded or non-standard inputs in domain use-cases.
- Authored and published a **Technical White Paper** detailing the foundational mathematical advancements and performance benchmarks that led to the successful intellectual property filing.

GauGuru – Agentic Multilingual RAG System

- Developed a sophisticated **Agentic AI** framework using a custom **MCP (Model Context Protocol) Server** to bridge the Nitara AI ecosystem with real-time data sources and internal knowledge bases.
- Architected a secure data retrieval layer using **Gateway APIs**, enabling **user-level role-based authenticated** database querying to ensure protected and audited access to sensitive database information.
- Implemented a comprehensive multilingual interface across 22 scheduled Indian languages by integrating **Automatic Speech Recognition (ASR)**, **Text-to-Speech (TTS)**, and **Neural Machine Translation (NMT)** subsystems.
- Engineered an autonomous search agent to synthesize up-to-date informative answers from the internet, providing Indian dairy farmers with real-time agricultural & animal husbandry insights.
- Deployed the solution as a containerized, **GPU-accelerated microservice** using **Docker** in Linux servers, enabling high-concurrency processing for real-time performance.

UIDIB – Unique Identification and Digital Identity for Bovines - {Intellectual Property: Patent Filed}

- Developed an innovative biometric identification system utilizing **Deep Learning** and **Mobile Image Analysis** to establish unique digital identities for cattle through high-resolution muzzle pattern recognition.
- Engineered a robust **Computer Vision** pipeline featuring **Object Detection** for region-of-interest localization and **Deep Feature Extraction** to isolate invariant dermal textures.
- Utilized **Metric Learning** frameworks during the training phase to optimize embedding spaces, achieving a **99% identification accuracy** and a mean query time of under 5 seconds.
- Authored foundational research detailing the scalability of the **UIDIB** framework, underscoring the utility of **Artificial Intelligence** in addressing critical traceability and livestock management challenges in the agricultural sector and dairy industry.

Swin-MoE - Expert-Level Body Condition Scoring System - {Intellectual Property}

- **Engineered** a high-accuracy vision system using **Swin Transformers** and **Sparse MoE** to estimate Body Condition Scores (BCS) from 2D back-view images, reducing hardware costs by avoiding depth sensors.
- **Improved** model sensitivity to rank-based labels by integrating **CORN loss**, resulting in a **91.1% accuracy** (± 0.5 range) and a **0.944 kappa coefficient**, matching expert human performance.
- **Benchmarked** architecture against ResNet50, ViT, and ConvNeXt; demonstrated that the synergy of ordinal loss and MoE yields an **8.4% performance gain** over standard classification baselines.
- Authored foundational research detailing the **Swin-MoE architecture**, underscoring the utility of **Vision Transformers and sparse modeling** in addressing critical health monitoring and management challenges in the dairy industry.

Multimodal AI Content Moderation System

- Engineered a comprehensive safety platform utilizing **Natural Language Processing, Computer Vision, and Speech Recognition** to identify and filter explicit, inappropriate, or non-compliant digital assets.
- Integrated **Vision-Language Models** and generative architectures to perform deep semantic analysis of static images and **Temporal Video Sequences**, ensuring high-precision detection of nuanced safety violations.
- Developed a robust audio moderation layer using **Speech-to-Text** transcription and sentiment analysis to monitor and flag prohibited content across diverse vocal modalities and dialects.

PashuWajan – Cattle Volumetric Weight Estimation - {Intellectual Property}

- Developed a multi-stage computer vision pipeline utilizing **Object Detection** and **Keypoint Detection** to automate the extraction of anatomical landmarks from 2D imagery for non-invasive biometric analysis.
- Integrated **Monocular Depth Estimation** to reconstruct 3D type surface metrics from single-camera feeds, providing a scalable, contact-free digital alternative to physical weighing scales in livestock management.

PashuNasal – Cattle Breed & Species Detection

- Developed a robust computer vision pipeline utilizing **Vision Transformers (ViT)** to automate the multi-level identification of cattle breed, type, and species, achieving an overall classification **accuracy of over 90%**.
- Leveraged self-attention mechanisms to extract complex morphological features across diverse phenotypic variations, significantly improving recognition precision compared to traditional convolutional architectures.
- Optimized the transformer-based inference workflow for real-time deployment, addressing critical scalability and latency requirements for edge-based agricultural monitoring systems.

PashuDaam – Cattle Valuation

- Developed an AI model capable of accurately estimating the market price of cattle based on visual input.
- Utilized advanced computer vision techniques to analyze key cattle attributes relevant to valuation.

AWARDS

- Received **Innovator Award** in recognition of exceptional performance, active research, and continuous contributions to innovation, including the design of the Swin-MoE, an AI-driven computer vision model for expert-level cattle body condition scoring. ([view here](#)) GormalOne LLP, Jan 2026
- Received the **Best Performer Award** for delivering impactful AI solutions, showcasing technical excellence, and exceeding project goals. ([view here](#)) GormalOne LLP, Jan 2025
- Awarded **Innovator of the Quarter** for developing GauGuru - GPT for Dairy Farming & Cattle Health, an impactful tool in the Dairy Industry. ([view here](#)) GormalOne LLP, Jul 2024