

ANUBHAV KUMAR SINGH

Senior Machine Learning Engineer | GenAI & Robotics Specialist
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EXECUTIVE SUMMARY

Senior Applied AI Engineer with 5+ years of experience building production-grade AI systems across Generative AI, Computer Vision, and Robotics. Proven track record of delivering high-impact solutions, including a 99% accurate financial RCA system. Specializes in LLM-powered systems (RAG, agents) and real-time AI deployments, bridging research and scalable production. Deep expertise in transforming complex workflows into autonomous and scalable systems.

SKILLS

Generative AI & LLMs : RAG, Agentic AI, MCP Servers, Semantic Kernel, LangChain, LangGraph, GPT-4, Llama 3 Fine-Tuning, Vector DBs, Transformers, Hugging Face

Computer Vision & ML : YOLO (v8/v10), PyTorch, TensorFlow, CNNs, LSTMs, Object Detection, Tracking, Segmentation, Reinforcement Learning, OCR, Scikit-learn, Whisper

Robotics & Embedded Systems : ROS/ROS2, 6-DOF Arms, SLAM, Sensor Fusion (LIDAR + Vision), Jetson Nano, Arduino, ESP32

MLOps & Backend : AWS, GCP, Azure, Docker, Kubernetes, FastAPI, WebSockets, CI/CD (GitHub Actions, Azure DevOps), Python

WORK EXPERIENCE

Machine Learning Engineer

Capgemini (Client: Unilever, Reliance)

April 2025 – Present

Hyderabad, IN

- Architected and developed Generative AI-powered Root Cause Analysis system for financial workflows using Semantic Kernel.
- Developed a production-ready multi-agent architecture with explainable AI capabilities and RAG-based memory architecture achieving ~99% accuracy.
- Developed scalable backend services and automated deployments via CI/CD pipelines (Azure DevOps + GitHub Actions).
- Built an AI agent that processes customer emails, validates inventory availability, and automatically generates quotations.

Lead AI & Computer Vision Engineer

Techolution

Jun 2023 – Mar 2025

Hyderabad, IN

- Led development of AI-powered robotic systems with real-time vision-based error detection leveraging multimodal LLMs.
- Built a 6-DOF robotic arm system using LSTM + inverse kinematics achieving 0.1mm precision.
- Designed a YOLOv8-based defect detection system for healthcare manufacturing, reducing manual QA.
- Developed Voice AI applications for real world, focusing on speech-to-text pipelines, conversational AI, and low-latency voice interactions.

Associate Solution Leader (AI/Robotics)

Brane Enterprises Pvt Ltd

Aug 2021 – Jun 2023

Hyderabad, IN

- Built an end-to-end **Autonomous-Driving Vehicle** framework using Computer Vision and supervised learning to optimize self-driving performance in off-road environments.
- Developed autonomous navigation systems (Rumbabot) using SLAM and Computer Vision pipelines.
- Built an end-to-end production-ready IoT smart socket plug for real-time monitoring and control of household appliances.

EDUCATION & ACHIEVEMENTS

- B.Tech in Electrical and Electronics Engineering | Galgotias College (GCET), Greater Noida | Nov 2020
- Winner: Technovation Hackathon (Sharda University) - Awarded **₹50,000** for high-voltage shielding systems
- **Top 5 Finalist:** International Wearable Competition (Instructables) for "[A Punch of Thousand Volts](#)"
- Certifications: Agile Project Management (Google), Practical AI (Udemy), Docker Environments (Coursera), Vertex AI (GCP)

PATENTS & INNOVATION

- High Voltage Shielding System (Patent No: **IN 201811018810**) - Invented a high-voltage protective shielding garment designed to deter external threats.
- Human-Controlled Battle Bots (Patent No: **IN 201811016109**) - Developed a remotely operated robotic combat platform integrating real-time control and autonomous mobility capabilities.
- Brain-Wave Controlled Electric Skateboard (Patent No: **IN 201911035498**) - Designed a brain-computer interface enabled electric skateboard that translates neural signals into movement commands for hands-free navigation.
- Vehicle Shielding System (Patent No: **IN 201811029398**) - Engineered a high-voltage vehicle protection system to strengthen occupant safety and provide defense against external threats.

PROJECTS

ARCARMOR

Intelligent Wearable Defense System

- Innovated a high-voltage DC-powered wearable defense suit with integrated conductive garment
- Engineered power-generating footwear system enabling portable energy supply.
- Developed a machine learning model to detect fear or stress to activate the ARMOR and trigger defensive activation mechanisms for user protection.

GENAI AUTONOMOUS AGENT (IAMNOTJARVIS)

Command OS

- Developed an autonomous LLM-powered coding agent for code generation, debugging, environment setup, and workflow automation.
- Built tool-calling and OS interaction capabilities allowing the agent to execute commands, manage tasks, and automate developer workflows including cron-based task scheduling and workflow orchestration.

AUTONOMOUS QUALITY CONTROL SYSTEM

Computer Vision

- Developed YOLOv8-based defect detection pipeline for industrial quality assurance.
- Achieved **~95%** detection accuracy in real-time environments using custom CNN models.
- Optimized for deployment in manufacturing/automation workflows.

DOORBOT AI

NLP Voice Assistant

- Developed LSTM-based speech-to-text system with custom fine-tuning.
- Achieved **~80%** accuracy in noisy environments with Inference Optimization.
- Integrated with embedded Linux-based edge computing system using Quantization of model.

AUTONOMOUS VEHICLE DRIVING

ML Framework

- Built end-to-end ML pipeline for self-driving simulation using behavioral cloning + CNN.
- Implemented sensor-based decision systems and model training workflows.
- Focused on autonomous navigation by supervised learning.