

MANISH MAURYA

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SUMMARY

AI/ML Engineer specializing in multilingual NLP, LLM fine-tuning, and language AI systems. Hands-on experience with LoRA-based fine-tuning for Indic languages and multilingual Named Entity Recognition using GLiNER. Proficient in Python, PyTorch, and Hugging Face Transformers, with a focus on developing, evaluating, and deploying practical AI solutions through APIs and ONNX Runtime.

EXPERIENCE

Research Intern | LTRC, IIIT Hyderabad May 2026 – Present

- Develop LoRA/QLoRA fine-tuning workflows for transformer LLMs in Hugging Face Transformers, targeting low-resource Indic languages
- Design RAG-based synthetic data pipelines that pair LLM generation with custom heuristics to build fine-tuning and evaluation datasets
- Advance zero-shot named entity recognition (NER) research using GLiNER
- Automate data collection and experiment workflows by integrating third-party and model-serving APIs

Research Intern | DRDO CAIR, Ministry of Defence, Govt. of India | Bengaluru Feb 2025 – Apr 2025

- Benchmarked monolingual and multilingual NER architectures in a comparative study, using F1-score as the primary evaluation metric
- Investigated zero-shot, entity-agnostic NER paradigms using span-based frameworks such as GLiNER
- Engineered language-ID-based routing, standardized output schemas, and ONNX-based multi-process inference for a scalable, model-agnostic NER inference engine

PROJECTS

Basketball Video Analytics | [GitHub](#) | *Python, Ultralytics YOLO, ByteTrack, Fashion-CLIP, OpenCV, Docker*

- Developed a computer vision pipeline to detect and track basketball players and the ball in game footage using YOLO and ByteTrack
- Implemented player team assignment, ball possession estimation, pass and interception detection, and player speed and distance calculations
- Built an annotated video output with a top-down tactical court view using court keypoint detection and homography mapping; improved pipeline input validation and video-processing error handling

Multilingual Synthetic Data Generator (LLM-based) | [GitHub](#) | *Python, Ollama, REST APIs, ReportLab, pytest, GitHub Actions*

- Built a CLI that generates unique, topic-conditioned sentences in 13 South Asian and global languages with any local Ollama LLM
- Implemented script validation (70%+ target-script letters), deduplication with re-prompting, and exact percentage-based language mixing
- Evaluated models on output quality: Gemma 4 produced 27/27 valid Urdu sentences vs. 9/27 for Llama 3
- Exported TXT, JSON, CSV, PDF, and MP3 datasets, backed by 37 pytest tests running in GitHub Actions CI

MCP-GuardBench: Security Benchmark for MCP Agents | [GitHub](#) | *Python, FastAPI, Pydantic, SQLAlchemy, PostgreSQL, Docker*

- Built a reproducible lab of 11 vulnerable MCP servers and 12 test cases (9 attacks, 3 benign) for tool poisoning, rug pulls, and secret leaks
- Designed a deterministic runtime policy that detected 7/9 attacks and blocked 8/9 with 0/3 false alarms, verified against server ground truth
- Benchmarked Cisco's open-source MCP Scanner (YARA analyzer) under identical conditions: 2/9 attacks detected, none blocked
- Published a PyPI CLI that audits MCP servers in Claude, Cursor, and VS Code and pins SHA-256 tool fingerprints to flag rug pulls in CI

TECHNICAL SKILLS

Programming Languages: Python, Java

Machine Learning & Deep Learning: PyTorch, TensorFlow, Scikit-learn, Pandas, Data Preprocessing, Model Evaluation

LLMs & NLP: LoRA, QLoRA, Supervised Fine-Tuning, RAG, Hugging Face Transformers, Prompt Engineering, Synthetic Data Generation, Ollama, Named Entity Recognition, Zero-Shot NER (GLiNER), Multilingual & Indic NLP

Computer Vision: OpenCV, Ultralytics YOLO, ByteTrack, Roboflow

Backend, Deployment & Tools: FastAPI, Pydantic, SQLAlchemy, PostgreSQL, Docker, ONNX Runtime, REST APIs, Git/GitHub, GitHub Actions (CI/CD), pytest

EDUCATION

REVA Institute of Technology, Bangalore

2021 – 2025

B.Tech, Computer Science and Information Technology | CGPA: 7.0 / 10

Relevant Coursework: Machine Learning, NLP, Data Structures & Algorithms, DBMS, Operating Systems, Computer Networks

CERTIFICATIONS

DeepLearning.AI: Machine Learning Specialization | PyTorch for Deep Learning Professional Certificate | Transformers in Practice | Agentic AI | TensorFlow Developer Professional Certificate

IBM: Python for Data Science | **Johns Hopkins University (Coursera):** HTML and CSS