Nikhil Mandayam Adyapak

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Summary

Master's student in Data Science at UW-Madison with 2+ years of experience as a Senior Software Engineer building scalable MLOps platforms and distributed AI systems. Specialized in the engineering side of AI, including architecting cloud-native training pipelines on Azure Kubernetes Service (AKS) and optimizing GPU infrastructure. Proven track record of reducing training cycles and engineering efficient data retrieval systems for ADAS.

Actively seeking Summer 2026 (May–Aug) and Co-op (July–Dec) opportunities in Machine Learning Engineering, MLOps, and Data Science.

Education

University of Wisconsin-Madison Sep 2025 - May 2027
Masters in Data Science GPA - 3.65/4.00
Coursework: Machine Learning, Foundation Models, Database Design & Implementation, Statistical Models, Statistical Methods, Statistical Inference for Data Science

PES University - Bengaluru, India Aug 2019 – May 2023
Bachelor of Technology in Computer Science & Engineering GPA - 3.78/4.00
Specialization: Machine Intelligence & Data Science
Coursework: Algorithms, Data Structures, Data Science, Linear Algebra, Machine Learning, Big Data, Cloud Computing

Technical Skills

Programming languages: Python, C, C++, Java, SQL, R
ML & Statistics: PyTorch, TensorFlow, HuggingFace, Transformers, LLM, CNN, GAN, scikit-learn, OpenCV, matplotlib
MLOps & Workflows: Ray, MLFlow, DVC, Argo Workflows, Azure ML Studio, Prometheus, Grafana
Cloud: Azure, AWS, AKS, Docker, Terraform, Azure DevOps, GitHub Actions, Linux
Databases & Tools: ElasticSearch, PostgreSQL, MySQL, MongoDB, FastAPI, Flask, Streamlit, GitHub

Research Experience

Bosch Global Software Technologies (BGSW) Bengaluru, India
Senior Engineer – Data Engineering for Advance Driver Assisted Systems (ADAS) Aug 2023 – Aug 2025

- Engineered **scene-understanding** image retrieval pipeline for **fine-grained dataset** generation: scene graphs (**hugging face transformers + ensemble of foundation models**) improving corner-cases for complex driving scenarios.
- Applied **image-complexity estimation** for **cost-aware labeling**, cutting annotation effort and labeling costs by **30%**.
- Researched optimal deployment strategies for multi-tenant **Ray Clusters** on **on-premise workstations** and **Azure Kubernetes Service (AKS)** to efficiently support **ML Workloads**.
- Integrated **CLIP embedding** re-use with **80%** cross-version alignment, avoiding full re-indexing of legacy image vectors.

Center for Information Security Forensics and Cyber Resilience, PES University Bengaluru, India
Summer Research Intern; Advisor: Prof. Vineetha B, Dr. Prasad B Honnavalli May 2021 – Nov 2021

- Research Intern in the **Cryptography Domain**, specifically in **Cryptanalysis of Ciphers.**
- Developed Novel ways of Decrypting Columnar Transposition Ciphers without needing the encryption key or its length.

Industry Experience

Bosch Global Software Technologies (BGSW) Bengaluru, India
Senior Engineer – Data Engineering for Advance Driver Assisted Systems (ADAS) Aug 2023 – Aug 2025

- Delivered **MLOps platform** for pedestrian detection (**Azure ML Studio + MLFlow**) with end-to-end **ML lifecycle**; enabled **multi-GPU training** (**3x** faster) and cut GPU costs by **60%**.
- Designed and scaled a **Ray Cluster** based distributed **ML training** system on **Azure Kubernetes Service (AKS)**, reducing retraining cycles from **4 weeks** to **1 week** (**75% faster**) and supporting **30+** teams.
- Developed a **60M+ image-search engine** using **CLIP embeddings + ElasticSearch**, enabling edge-case retreival and cutting reviewer triage from **4 hours** to **10 minutes** (**95% efficiency gain**).
- Deployed an on-prem **Ollama LLM** with a Python FastAPI wrapper, enabling private, team-wide LLM access (**150+ users**) with zero external data egress.
- Streamlined **ML pipeline** provisioning on **AKS** (**Terraform, Helm, GitHub Actions, Argo**) for **multi-tenant** ADAS teams; integrated Prometheus monitoring/alerting, and reduced experiment setup from **3 days** to **5 minutes** (**99%** efficiency gain) for **30+** teams.

Machine Learning Operations (MLOps) Intern Jan 2023 – May 2023 & Jun 2022 – Jul 2022

- Built on-premise **MLOps** pipeline (**DVC + MLflow**), reducing model setup time from **1 Week** to **1 Day**, **85%** faster.
- Accelerated **multi-GPU** training for YOLOv5 and Detectron2 on **Azure ML Studio**, reducing training time by **67%**.

Projects and Publications

[1] Code Runtime Complexity Prediction - ERCICA (Springer), 2023 | Python, TensorFlow, sklearn, Streamlit, NetworkX
Predicted Big-O runtime complexity of C/Java/Python code using static analysis and ML classification with BiLSTM over Abstract Syntax Trees graph embeddings on IBM CodeNet dataset (**Accuracy: 96%**). **[View Publication]**

[2] MLOps POC pipeline for Pedestrian Detection - 2023 | Python, DVC, MLFlow, DAG, Streamlit, SQLite, PyTorch
Implemented on-premise MLOps starter template with DVC + Detectron2 for end-to-end ML lifecycle.**[View Project]**

[3] Novel ways of decrypting transposition ciphers, - IEEE smartgencon, 2022 | Python, Optimization, Natural Language
Introduced cipher-breaking optimization techniques over columnar transposition ciphers. **[View Publication]**

Presentations and Competitions

3 Minute Thesis (3MT) Competition — Madison, WI, USA
University of Wisconsin-Madison — Nov 2025

- Selected to present research on "Generating Fine-Grained Datasets for Autonomous Driving" using vision foundation models.
- Condensed technical research into a compelling 3-minute narrative for a general, non-technical audience.

Teaching Experience

Teaching Assistant, CS564: Database Management Systems — Madison, WI, USA
University of Wisconsin-Madison; Professor: Xiangyao Yu — Jan 2026 – May 2026
Lead assignment sections, mentor students, and hold office hours to support database projects and assignments. (**SQL**, **Python**). Design and grade assignments, exams, and project rubrics; provide feedback to **200+** students to improve understanding of database design and query optimization. Assist course instructors with course logistics, and automated grading pipelines.

Teaching Assistant, CS203: Statistics for Data Science — Bengaluru, India
PES University; Professors: Dr. Bharathi R, Swati M — September 2022 – Dec 2022
Responsibilities included teaching, designing, and grading coursework, assignments, and projects. Delivered hands-on sessions on **Data Science topics** such as **hypothesis testing, statistics, and supervised ML**. Organized, managed, and served as a panelist for a Hackathon. Mentored **120+** students enrolled in the undergraduate level Data Science course.

Professional Awards and Scholarships

Data Engineering Department Meeting, BGSW	Best Presenter Award/120+ team members	2024
Data Engineering Department, BGSW	Top Achiever Award/Ranked **1st** among 120+ Engineers	2024
DAC Scholarship Awards,PES University	Distinction Award for Semesters 3 to 6	2022-2023
MRD Scholarship Awards,PES University	40% tuition fee scholarship for top 20%/1100+ students	2020

Services and Volunteering Experience

Volunteer, BGSW CSR — Bengaluru, India
Bosch Global Software Technologies — Oct 2023 – Mar 2025

- **Mentorship & Inclusion:** Guided candidates with disabilities in interview preparation (Youth4Jobs) and taught Computer Science fundamentals to underprivileged students.
- **Social Impact:** Assisted in agricultural initiatives where produce revenue funded monthly stipends for differently-abled individuals.
- **Animal Welfare:** Supported habitat restoration for rescued elephants and assisted in adoption drives for abandoned dogs (CUPA).
- **Community Outreach:** Created interactive educational materials for rural childcare centers and coached sports for students in government schools.

Volunteer, CSR Club — Bengaluru, India
PES University — Aug 2019 – Dec 2019

- **Infrastructure Renovation:** Participated in painting and restoring facilities at local government colleges for underprivileged students.
- **Sustainability Drives:** Led campus afforestation initiatives, planting saplings to improve green cover in barren campus zones.