ASHWIN BADUNI

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EDUCATION

Mahindra University ([MU](#))   Oct 2021 – Aug 2025
B.Tech in Computational Mathematics

EXPERIENCE

MihawkAI | *AI Engineer*   July 2025 – Present
Architecting enterprise-grade agentic AI systems with multi-stage reasoning pipelines for automated decision workflows. Building intelligent query routing layers that dynamically switch between conversational AI and structured data retrieval. Developing real-time computer vision pipelines for safety-critical video monitoring and automated compliance detection.

National Informatics Centre ([NIC](#)) | *AI Software Intern*   Jan 2025 – April 2025
Built an AI chatbot that streamlined vehicle registration support using NLP and real-time analytics. Improved backend scalability with FastAPI, ensured secure user access via CAPTCHA, and boosted engagement through interactive data visualizations.

Gurugram Metropolitan Development Authority ([GMDA](#)) | *Full-Stack Intern*   June 2022 – Aug 2022
Revamped the UI/UX of GMDA's internal dashboard using Bootstrap and JavaScript, delivering a more responsive, accessible, and cohesive user experience across platforms. Collaborated closely with backend teams to streamline data workflows, minimizing manual input and elevating operational efficiency.

PROJECTS

Neural CAPTCHA Recognition System 🔗   May 2025
- Built a complete CAPTCHA recognition pipeline from scratch using PyTorch, featuring CNN-based encoders (ResNet) with LSTM decoders and attention mechanisms for sequence-to-sequence learning.
- Implemented synthetic dataset generation, beam search decoding, and comprehensive evaluation metrics (CER, WER) with production-ready features like checkpoint management and mixed precision training.

AI Powered Analytics Dashboard Chatbot 🔗   Jan – Apr 2025
- Designed a multi-modal analytics system using FastAPI with 4-bit quantized LLMs (GPTQ/AWQ) for efficient inference, processing natural language queries into SQL and generating dynamic visualizations.
- Built adaptive data parsing pipeline supporting CSV, Excel, and JSON with automatic schema inference, statistical profiling, and outlier detection for exploratory data analysis workflows.
- Implemented response caching with LRU eviction, rate limiting, CAPTCHA verification, and real-time streaming responses with Server-Sent Events for interactive dashboard experiences.

Video Motion Amplification and Vibration Analysis (SIH 2023 Winner) 🔗   Dec 2023
- Developed a self-supervised Eulerian video magnification system using optical flow decomposition and temporal bandpass filtering for non-contact vibration analysis in industrial predictive maintenance.
- Implemented FFT-based frequency extraction with Hamming windowing, dominant mode isolation, and 3D surface visualization with interactive heatmaps for spatial vibration pattern diagnostics.
- Achieved sub-pixel motion detection (0.1mm amplitude) at 60Hz sampling, enabling equipment fault detection without physical sensors—awarded 1st place among 50,000+ participants nationwide.

ACHIEVEMENTS

Smart India Hackathon (SIH) | *Winner*   2023

Indian International Model United Nations (IIMUN) | *High Commendation*   2017

Scindia School Model United Nations (SCIMUN) | *Special Mention*   2016

CERTIFICATIONS

Google Cybersecurity Professional Certificate 🔗 | *Credential ID: DXRLYIKE4D2T*   2025

IBM Data Analyst Professional Certificate 🔗 | *Credential ID: 9WRKVKV2DUIH*   2025

IRM Enterprise Risk Management - Level 1 🔗 | *Credential ID: IRMIN/L1CIM/2023/00000000000675*   2023

EXTRACURRICULAR ACTIVITIES

Mahindra University Student Council | *Finance Representative*
Managed end-to-end budgeting for student-led initiatives, ensuring strategic fund allocation,
financial transparency, and optimal resource utilization. Also implemented structured financial reporting.

Mahindra University Maths Society | *Member*
Collaborated with peers to organize mathematics workshops and competitions, promoted analytical thinking,
and contributed to fostering a vibrant mathematical community on campus.

TECHNICAL SKILLS

Languages: Python, C/C++, Java, JavaScript, SQL
AI/ML Frameworks: PyTorch, TensorFlow, LangChain, OpenCV, CUDA
Deep Learning: CNNs, LSTMs, Transformers, Attention Mechanisms, Seq2Seq, Beam Search, CTC Loss
Agentic & LLM Systems: Multi-Agent Pipelines, Quantized LLMs, RAG, Intent Routing, Tool Orchestration
Computer Vision: Optical Flow, Eulerian Video Magnification, FFT Analysis, Real-time Object Detection
Backend & Infrastructure: FastAPI, Flask, Node.js, React, Docker, Git, Linux, AWS