Aditya Barman

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EDUCATION

University of Illinois at Urbana-Champaign (UIUC) — Champaign, IL
Bachelor of Science in Computer Science & Statistics, Minor in Mathematics — *Graduation: May 2027*
- GPA: 4.0/4.0
- James Scholars Honors Program
- Activities: Pulse Competitions Committee, CS Sail Logistics Staff, Simplify Campus Ambassador

EXPERIENCE

Motorola Solutions — Chicago, IL
Software Engineering Intern & Co-Op — *May 2025 – Nov. 2025*
- Designed and deployed a full-stack RAG system using LangChain, ChromaDB, HuggingFace embeddings, and Gemini API, indexing 30k+ proprietary documents with vector storage and API integration to deliver structured knowledge retrieval inside Motorola's documentation platform for 350 systems engineers.
- Implemented ingestion pipelines with chunking, embeddings, and access controls, improving initial retrieval precision by over 40% and boosting accuracy by 65% through JSON serialization of diagrams.
- Deployed to production a Python + DrawSVG engineering documentation generation pipeline, now used organization-wide.
- Extended RAG system with multimodal capabilities using OpenAI CLIP embeddings to answer schematic questions and automated rack/cable diagram generation with Python and DrawSVG to cut manual effort by 80%.

University of Illinois & United States Department of Agriculture (USDA) — Urbana, IL
Computer Vision & Machine Learning Researcher — *Nov. 2024 – May 2025*
- Engineered an OpenCV-based image processing pipeline to warp, segment, and analyze 198 kernel/flake image pairs, extracting area and shape features with a 95%+ success rate.
- Implemented feature extraction algorithms to quantify kernel to flake surface areas ratios, producing a dataset of 1,700+ measurements for downstream ML.
- Applied TensorFlow regression models to predict popcorn flake expansion from kernel characteristics, improving predictive accuracy and accelerating breeding program analysis.

Chief Digital and Artificial Intelligence Office – Department of Defense — Washington, D.C.
Software Development Intern – AI4Defense Program — *June 2024 – Aug. 2024*
- Developed a Python application with OpenAI API integration to extract and analyze key terms from government documents, automating workflows and reducing manual effort by 90%.
- Built a full-stack prototype supporting PDF ingestion, frequency analysis, sentiment scoring, and visualization for rapid policy assessment by government officials.
- Presented solution at the AI4Defense Showcase and achieved a podium finish.

George Mason University (GMU) — Fairfax, VA
Artificial Intelligence Research Intern — *June 2024 – Aug. 2024*
- Compared 4 large language models' (ChatGPT, Copilot, Claude, Gemini) performance in grading algorithm assignments to assess the feasibility of LLM evaluation.
- Computed Intraclass Correlation Coefficients and other statistical metrics to quantify consistency across models.
- Co-authored paper accepted to the MIT Undergraduate Research Technology Conference (URTC) 2024.

PROJECTS

EchoBrief | *FastAPI, Python, JavaScript, Google Gemini API, OpenAI Whisper* — July 2025
- Developed an AI-powered post-incident analysis tool processing radio traffic recordings to generate after-action dashboards.
- Selected as a Top 10 project out of 495 Open Innovation Hackathon submissions in Motorola Solutions' Project Greenlight for potential product integration.
- Integrated OpenAI Whisper for transcription and Google Gemini API for summarization + event extraction, surfacing officer contributions, key incidents, and overall timeline with timestamps and floorplan overlays.
- Delivered incident summaries and visual event mapping that reduced manual after-action review time by 70%.

LearnLion | *Python, Flask, React, HTML/CSS, Google Gemini API* — Nov. 2024
- Won second place at HackIllinois x CS124 Hackathon for a tutoring chatbot aimed at elementary students.
- Implemented a custom substring frequency mapping algorithm to generate accurate, context-aware responses.

TECHNICAL SKILLS

Languages: Python, C++, Kotlin, Java, SQL (Postgres), JavaScript, HTML/CSS, R, MATLAB
Frameworks: Flask, FastAPI, LangChain, Tensorflow, Django, Express
Developer Tools: Git, Node.js, MongoDB, Docker, AWS (EC2, S3, Lambda, RDS, etc.), Google Cloud Platform (GCP)
Libraries: React, Pandas, NumPy, Matplotlib, Seaborn, Scikit-learn, OpenCV, HuggingFace Transformers