

# Aditya Maheshwari

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## EXPERIENCE

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- PayPal** | Software Engineer | San Jose, CA Jun 2023 – Present
- Drove cloud-native migration of the compliance case-management platform (OneSCM) from on-prem Oracle to GCP (Cloud Run, Spanner, GKE, Pub/Sub) with cell-based multi-tenant architecture; led initial AWS/GCP POC infrastructure (EKS, Fargate, DynamoDB, CloudWatch, Cognito) and presented architecture to SVP/CTO-level leadership
  - Engineered a fraud refund and currency-conversion system for Fraud Sciences, enabling recovery of **\$160M annually** from fraudulent accounts and mitigating **\$10M** in litigation risk across 100K+ accounts
  - Automated Suspicious Activity Report (SAR) filing to regulators based on 5 anti-money-laundering rules, eliminating manual investigation on **10K+ cases/year** and saving **30K+ investigator hours annually**
  - Built an Account Bundling tool for Global Investigation and Science teams, consolidating **1M+ transaction and account records** and automating the filing process to multiple jurisdiction units
  - Engineered **3 LLM-powered chat assistants** to automate case processing, team routing, form prepopulation, and compliance narrative generation—reducing manual workflows across front and back-office operations
  - Developed **2 Agentic AI solutions** using Crew AI and LLMs: (1) a voice-activated assistant to trigger case actions via spoken commands, and (2) an Oracle SQL prompt-to-PR generator that fetches table metadata and historical change requests to auto-generate scripts and propose GitHub pull requests
  - Integrated an AI-powered SAR narrative generator to assist investigators with regulatory filing, and a Root Cause Analysis assistant that captures logs, UI/backend data, and JIRA context with guardrails to automate incident triage
  - Re-architected the Law Enforcement Fulfillment Portal handling **25K+ subpoenas/year**, reducing system latency and storage by **55%**; upgraded SPARK portal and Salesforce integration for front/back-office escalation and data-access workflows, saving **\$5M/yr**
  - Orchestrated an automated third-party integration with NCMEC (National Center for Missing & Exploited Children), facilitating the reporting of **2,000+ child-exploitation cases/year** to law enforcement and reducing investigator workload by hundreds of hours annually
- PayPal** | Software Engineer Intern | San Jose, CA Jun 2022 – Aug 2022
- Built a Java/Spring-based ETL data connector to extract, process, and load **3.5M case-management logs** into Celonis for process mining, enabling process discovery, simulation, and operational monitoring
  - Automated the daily movement of thousands of new case records via scheduled batch jobs, ensuring continuous and efficient data upload for real-time process analytics
- TestAIng** | Machine Learning Intern | Bangalore, India (Remote) May 2021 – Aug 2021
- Developed ML pipelines for time-series forecasting with concept-drift detection, achieving **7% error reduction** on enterprise datasets
  - Integrated 4 local and global explainability methods (LIME, SHAP) into the pipeline to provide actionable model interpretability for non-technical stakeholders
- Arevea Inc.** | Software Engineer Intern | Remote May 2021 – Aug 2021
- Designed and developed an admin portal for a virtual event management platform using Angular, Node.js, and SQL
  - Implemented secure RESTful APIs with QR-code-based event check-in functionality to manage events and schedules
- UMass CICS** | Undergraduate Research Assistant | Amherst, MA Dec 2021 – May 2023
- Evaluated causal inference algorithms on synthetically constructed non-linear observational datasets in R, quantifying robustness and complexity metrics under PhD researcher Pracheta Amaranath
  - Investigated explainability of modern NLP search engines (LETOR dataset) by applying LIME and SHAP, analyzing correlations between model outputs and human-interpretable search features under Prof. James Allan at CIIR

## EDUCATION

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### University of Massachusetts Amherst

Amherst, MA

*B.S. in Computer Science & Mathematics (Data Science & Statistics); Minor in Business*

Aug 2020 – May 2023

**GPA: 3.96** | Dean's List (all semesters) | Chancellor's Award Scholarship | Commonwealth Honors College

**Coursework:** Machine Learning, Deep Learning, NLP, Artificial Intelligence, Operating Systems, Algorithms, Algorithms for Data Science, Search Engines, Databases, Reverse Engineering & Vulnerability Analysis, Statistics, Regression Analysis, Statistical Computing, Scientific Computing, Financial Mathematics

## PROJECTS

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### Financial News Aggregator with AI Sentiment Analysis | *Python, Anthropic API, Grok, Google Sheets* 2025

- Built a multi-API financial intelligence system integrating 6+ data sources (Alpha Vantage, Finnhub, NewsAPI) with intelligent deduplication algorithms and standardized data models
- Implemented LLM-powered sentiment analysis using Anthropic Claude and Grok with automated Google Sheets integration for real-time portfolio-level signal aggregation and tracking

### Deep Learning Algorithms (From Scratch) | *Python, TensorFlow, music21* | [GitHub](#) 2022

- Trained an LSTM neural network on classical guitar compositions (Carcassi Op.60, Fernando Sor) to generate novel musical sequences using the music21 library
- Implemented logistic regression, convolutional neural networks, and multi-layer deep neural networks from scratch without high-level libraries for image classification and regression tasks

### CryptoSimulator | *Node.js, Express, MongoDB* | [GitHub](#) 2021

- Developed a back-end application simulating cryptocurrency trading with real-time exchange data via the Coinbase API
- Implemented secure user authentication with two-factor auth and API key management to protect user wallets and transactions

## TEACHING EXPERIENCE

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### UMass CICS | Course Assistant — CS 446: Search Engines | Amherst, MA May 2022 – May 2023

- Supported instruction for 160 students in an upper-level CS elective; designed and graded exams, programming projects, and exercises. Converted manual grading of coding projects into auto-grading using Gradescope, Docker, and Python
- Received **Best Teaching Assistant recognition** for outstanding instruction, logistics, and academic leadership

### UMass CICS | Course Assistant — CICS 256: Physical Computing | Amherst, MA Feb 2022 – May 2022

- Assisted in a lab-intensive Arduino-based physical computing course for 40 students; created and graded lab assignments, provided hands-on debugging help with sensors and microcontrollers, and mentored final project teams

## HONORS & AWARDS

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**IIT JEE Advanced** — **All-India Rank 2,533 / 1.4 Million** (Top ~0.2%) — One of the world's most competitive STEM entrance exams

**IPMAT IIM Indore** — **All-India Rank 1 / 20,000+** — Highly selective integrated management aptitude examination

**JEE Main** — **99.45 Percentile** — National-level engineering entrance exam (India)

**Best Teaching Assistant** — UMass Amherst, CS 446 Search Engines

**Dean's List** — All semesters at UMass Amherst | **Chancellor's Award Scholarship** — Merit-based award for academic excellence

## TECHNICAL SKILLS

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**Languages:** Java, Python, JavaScript, TypeScript, C/C++, R, SQL, HTML/CSS

**Frameworks & Libraries:** Spring Boot, TensorFlow, PyTorch, LangChain/Langflow, Crew AI, React, Node.js, Flask, Angular, Express

**Cloud & Infrastructure:** AWS (EKS, Fargate, DynamoDB, S3, CloudWatch, Cognito), GCP (BigQuery), Docker, Git, CI/CD

**Tools & Platforms:** Salesforce, Celonis, Oracle SQL, MongoDB, Gradescope, GitHub Actions

**Certifications:** AWS Certified Cloud Practitioner | Stanford Machine Learning (Coursera) | Neural Networks & Deep Learning (DeepLearning.AI)