



# ADITYA PACHPANDE

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## Education

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### Purdue University

Bachelor of Science in Computer Science, Data Science

May 2027

West Lafayette, Indiana

## Technical Skills

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**Languages:** Python, R, PostgreSQL, Julia, Scala, Java, C++

**Software:** Tableau, Power BI, KNIME, Microsoft Suite

**ML/AI Tools:** PyTorch, TensorFlow, Scikit-learn, Keras, Pandas, NumPy, SciPy, NLTK, Google-ADK, Autogen, HuggingFace, Spark, Kafka, GCP, BigQuery

**SDE:** Worked with Firebase, Redis, MongoDB, Supabase, NextJS

## Experience

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### National Aeronautics and Space Administration, Goddard

June 2025 – Present

*Undergraduate Intern – Cryosphere Modeling & Remote Sensing*

*Greenbelt, Maryland*

- Extended the **Cryosphere Model Comparison Tool (CMCT)** with a deep-learning **calving-front detector** that works with ICESat-2 tracks, boosting automated event recall and cutting false positives in half.
- I integrated results into an interactive calving-flux visualization dashboard for scientific analysis and outreach.

### Trauma THOMPSON, an AI Copilot for First Response Medicine

November 2024 - May 2025

*Machine Learning Undergraduate Researcher*

*Purdue University, West Lafayette*

- Engineered **YOLOv11** CV models for medical tool detection, achieving **96% mAP@[0.5:0.95]** with **model quantization** and **focal loss** optimization for class imbalance in critical medical datasets.
- Developed **active learning pipeline** with **uncertainty sampling** that reduced data annotation requirements by **80%**, implemented with **PyTorch** and **Ray** for distributed processing.
- Created **mixed reality visualization** system integrating ML inferences on **HoloLens**; contributed statistical analysis and performance optimization sections to research paper using **ablation studies**.

### BMek TECH LLP

August 2022 - May 2023

*Machine Learning Engineer Intern*

- Engineered **unsupervised clustering algorithms** (**K-means**, **DBSCAN**, **Gaussian Mixture Models**) for customer segmentation.
- Implemented advanced ML models including **DQN** (reinforcement learning), **gradient boosting**, **random forest**, and **CNN/LSTM architectures** for time-series prediction.
- Developed **stacked ensemble** framework with **meta-learner** optimization, improving prediction accuracy on medical performance data by **18%** over baseline models.

## Projects

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### Spectator AI – Sports Analytics Platform

August 2022 – Present

- Secured **\$25 k Azure** and **\$2.5 k OpenAI** credits and engineered a container-based, autoscaling ML infrastructure on **Azure ML** with **Docker** for seamless experimentation and deployment.
- Developed end-to-end CV & NLP pipelines: **YOLOv11** player-tracking (**95 % mAP**) and transformer-based sports-content analysis via **BERT** fine-tuning and **ADK** agentic workflows.
- Deployed real-time tactical analytics (**Grounding DINO** formation detection, trajectory clustering) through micro-services (**FastAPI** on **AWS SageMaker**) with **Redis**, **Firebase**, and **Railway** for experiment tracking and inference delivery.

### Polistock.app – Agentic AI for Political Events & Stock Insights

May 2025 – Present

- Designed an agent-based architecture (Watcher → Analyst → Trader) orchestrated with **Goodle ADK** and **MCP Servers**; ingests news & social data through **Supabase Realtime** triggers, embeds text with **Gemma 3n**, and stores vectors in **Postgres pgvector**, enabling low-latency RAG queries via **PostGreSQL**.
- Fine-tuned **FinBERT** and **RoBERTa-finance** for sentiment and policy-impact scoring; fused outputs with **GPT-4o** reasoning, **time-series LSTMs**, and **Monte-Carlo simulations**. Integrated a suite of external APIs—**NewsAPI**, **Twitter/X**, **Alpha Vantage**, **Truthsocial**, **SEC EDGAR**, and **Google Trends**—for multidimensional market signals.
- Shipped a full-stack product: **Next.js/React** front-end, **FastAPI** back-end on **Railway** with containerized inference; authentication & storage via **Supabase**, real-time alerts through **Firebase Cloud Messaging**, **Twilio SMS**, and **Slack** webhooks; experiment tracking with **MLflow** and data/version control using **DVC**.

## Certifications

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- Stanford Machine Learning Specialization - Deep Learning, NLP, Computer Vision
- Google Advanced Data Analytics - Statistical Analysis, Machine Learning
- AWS Machine Learning Specialty
- Deep Learning Specialization - Neural Networks, CNNs, RNNs, Transformers
- TensorFlow Developer Certificate - ML Models, Computer Vision, NLP