Hardik Kothari
Computer Science and Engineering (AI & DS)

📍 Ratlam, Madhya Pradesh, India

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Objective

A highly motivated and results-driven Computer Science and Artificial Intelligence & Data Science (CSE-AIDS) student with a strong foundation in backend development, cloud technologies, and scalable system design. Proficient in building secure and efficient APIs, database management, and deploying machine learning and deep learning solutions in production environments. Skilled in **Python**, **Flask**, **PostgreSQL**, and cloud platforms, with a deep understanding of **object-oriented programming (OOP)**, **RESTful services**, and **microservices architecture**. Passionate about creating high-quality, maintainable code that drives performance, scalability, and innovation. Committed to continuous learning and leveraging cutting-edge technologies to deliver impactful software solutions that solve real-world problems and optimize business processes.

Education

Bachelor of Technology in Computer Science and Engineering (AI & DS)
Poornima University, Jaipur, Rajasthan
August 2022 – Present

Current CGPA: 8.8/10
Key Courses: Machine Learning, Artificial Intelligence, Deep Learning, NLP, Data Structures, Algorithms, Relational Database Management System, Data Visualization, and more.

Higher Secondary Education (Class XII)
Shri Guru Tegh Bahadur Public School, Ratlam, Madhya Pradesh
Year of Completion: 2022

Percentage: 76%

Technical Skills

- **Languages:** Python, R Programming, C++, C
- **Web Technologies:** Flask, FastAPI, RESTful APIs
- **Tools DevOps:** Git, GitHub, Docker, Postman, Redis
- **Software Design:** Object-Oriented Programming (OOP), Clean Code Principles, Agile Methodology
- **Others:** MySQL, PostgreSQL, Linux, Problem Solving

Professional Experience

Research and Development Intern
Axis India Machine Learning, Jaipur, India
May 2024 – June 2024

- Built and trained advanced neural network models, including Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs), for experimental analysis and real-world applications.
- Implemented optimization techniques such as hyperparameter tuning, dropout regularization, and batch normalization to improve model performance and generalization.
- Conducted in-depth performance analysis of neural networks, presenting key insights through clear visualizations and actionable recommendations for model improvement.
- Collaborated with cross-functional teams to create comprehensive documentation and educational resources, driving understanding and adoption of AI and ML solutions within the organization.
- Created containerized environments for seamless testing and production deployment.

Projects

- **Stock Market Forecasting System with LSTM and Flask API** ⍥ Stock Market Prediction
  - Designed a microservice using **Flask** to serve LSTM-based stock predictions via RESTful endpoints.
  - Fetched and preprocessed real-time data using **Yahoo Finance API**, engineered features using **Pandas**, and visualized trends with **Matplotlib**.
  - Trained and tuned a **bidirectional LSTM** model (PyTorch) optimized using **MSE** and **MAPE**.
  - Deployed via **Docker**, tested with **Pytest**, and integrated CI/CD workflows for clean deployment.

- **TaskOps – Scalable Flask Backend for Task Management (MediaAmp)** ⍥ MediaAmp Backend Project
  - Developed a modular, object-oriented **Flask backend** with Blueprints, Services, and Repositories, aligned with clean architecture practices.
  - Integrated **PostgreSQL** via **SQLAlchemy ORM** using connection pooling, retry mechanisms, and schema migrations through **Alembic**.
  - Designed role-secured models (`User`, `TaskManager`, `TaskLogger`) with **RBAC**, **audit logging**, **lazy loading**, and cascading deletes.
  - Built a distributed **Celery worker system with Redis** for daily background task migrations with duplication checks and scalable message queues.
  - Developed secure **RESTful APIs** with **JWT authentication**, **Pydantic input validation**, Redis-based caching, and optimized queries.
  - **Dockerized** the project with multi-environment support (dev/stage/prod), and authored complete API documentation with usage guides.

- **SignSpeak – Real-Time AI Sign Language to Speech Translator** ⍥ SignSpeak Project
  - Built a full-stack application using **FastAPI** backend and **Streamlit** frontend for real-time gesture-to-speech conversion.
  - Integrated **YOLOv8 + MediaPipe** for high-accuracy hand gesture recognition and used **PyTorch** for intent classification.
  - Developed clean, modular Python codebase following **OOP principles** and unit-tested with **Pytest**.
  - Containerized and deployed on **Docker** and tested on multiple platforms, following Agile development and sprint retrospectives.

- **Scalable Neural Network API for Classification Tasks** ⍥ Neural Network Deployment
  - Developed an extensible classification API using **Flask** and **Keras**, supporting multi-class predictions.
  - Followed **OOP and modular design patterns** to improve code reusability and testability.
  - Automated full ML pipeline: preprocessing, training, evaluation, and deployment with **Docker Compose**.
  - Documented endpoints using **Swagger/OpenAPI**; implemented Git-based CI workflows for code versioning.

- **Multilingual Seq2Seq Translation App (English to Italian)** ⍥ Eng-to-Italian Translation
  - Built an **attention-based Seq2Seq translation system** with PyTorch and deployed via a RESTful **FastAPI**
  - Created interactive frontend using **Streamlit**, enabling dynamic user input and speech-based output.
  - Emphasized scalable architecture: modular code, structured layers, and reusable inference APIs.
  - Deployed using **Docker** on **AWS EC2**; integrated basic monitoring for usage insights.

Achievements

- Successfully completed the **Solution AWS Architecture Job Simulation** by Forage. ✸ View Certificate
- Completed the **Google Cloud Jam** certification by Google Cloud. ✸ View Certificate
- Published a review research paper on *How To Control AI.* ◮ View Article
- Contributed to multiple high-impact data science and AI hackathons, delivering innovative solutions that were recognized for their technical excellence and strong collaboration with cross-functional teams.