Utsav Mahajan

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SUMMARY

Enthusiastic and goal-driven Information Technology student with a deep interest in cloud infrastructure, DevOps automation, and MLOps pipelines. Passionate about designing scalable, reliable, and efficient systems that bridge the gap between development and operations. Skilled in leveraging cloud platforms, containerization, and CI/CD practices to streamline deployment workflows. Strong believer in continuous learning, automation, and the integration of machine learning into real-world production environments. Eager to contribute to innovative projects that combine Cloud, AI, and DevOps practices to drive impactful results.

EDUCATION

Bachelor of Technology in Information Technology, CGPA: 7.91 Aug 2022 - Present
Medicaps University *Indore, Madhya Pradesh*

Relevant Coursework: Data Structures and Algorithms, Database Management Systems, Operating System, Software Engineering, Machine Learning, Distributed Cloud Computing

TECHNICAL SKILLS

Programming Languages: C++, Python, C, Go
Backend Development: FastAPI, Flask, RESTful APIs, CRUD Operations
Databases: PostgreSQL, MongoDB, DynamoDB
Frameworks & Libraries: NumPy, Pandas, Scikit-learn, TensorFlow
Tools & Platforms: Git, GitHub, Docker, Kubernetes, Postman
Cloud Technologies (AWS): EC2, S3, RDS, Lambda, SageMaker, Bedrock

TRAINING & INTERNSHIP EXPERIENCE

AI/ML Research Intern Jun 2023 - Jul 2023
E&ICT Academy, IIT Kanpur *Kanpur, Uttar Pradesh*

Completed a 4-week intensive summer training and internship program on Artificial Intelligence, organized by E & ICT Academy, IIT Kanpur under MeitY, Government of India. [Link]
Worked on a research-oriented project titled “CT Kidney Normal, Cyst, Tumor, and Stone Classification Model” using TensorFlow and CNN-based architectures. [Link]
Implemented preprocessing, feature extraction, and deep learning pipelines achieving high classification accuracy on medical imaging datasets.
Gained hands-on experience with Python, TensorFlow, and OpenCV, along with exposure to AI model optimization and validation.

PROJECTS

Kidney Disease Classification from CT Images using Deep Learning [Github]

- Developed, trained, and comparatively evaluated four distinct Convolutional Neural Network (CNN) models for classifying kidney disease from CT scans.

- Designed a custom CNN architecture (Model 1) implementing extensive data augmentation (flips, zooms, rotations), batch normalization, and dropout regularization to improve generalization.
- Trained the custom model using an Adam optimizer and early stopping, achieving 99.27% test accuracy with a 0.0631 loss.
- Successfully developed and optimized a final model (Model 4) that achieved a perfect 100.00% test accuracy with a near-zero loss (0.0011), demonstrating a strong capability in model tuning and optimization.
- Concluded that Model 4 was the optimal solution, demonstrating superior performance with perfect accuracy and the lowest loss.

AI-Based Attendance System with IoT Integration [Github]

- Objective: Replaced manual attendance tracking with an automated system using AI-driven facial recognition, reducing processing time by 87% compared to manual roll calls.
- Technology Stack: Python, Flask, InsightFace, OpenCV, PostgreSQL (Supabase), Raspberry Pi, HTML/CSS/JS.

Key Features:

- Developed a secure, full-stack web application with role-based access for teachers and students to manage and monitor attendance.
- Implemented a high-accuracy recognition engine (92.7%) by generating 512-D embeddings via InsightFace and matching them with cosine similarity.
- Integrated a Raspberry Pi as an HTTP server to create an IoT-based classroom announcement system.
- Automated low-attendance warnings by creating a backend service that sends email alerts to students below a 75% threshold.

FastAPI Social Chat [Github]

- Developed a secure RESTful API with FastAPI, Python, and PostgreSQL (AWS RDS).
- Implemented JWT token authentication, password hashing, and a full CRUD backend.
- Built a dynamic JavaScript/HTML/CSS frontend styled as a real-time chat application.
- Deployed the full stack to AWS EC2, using systemd for automated service management.

Bank Marketing Subscription Prediction [Github]

- Developed a Logistic Regression model to predict customer subscription to term deposits using the UCI Bank Marketing dataset.
- Engineered features by applying one-hot encoding to categorical data and used scikit-learn for model training and evaluation.
- Assessed model performance using ROC/AUC, confusion matrix, precision, and recall, demonstrating a complete machine learning workflow.
- Serialized the final trained model and label encoder using pickle for future deployment and inference.

CERTIFICATIONS

- AWS Certified Cloud Practitioner – Amazon Web Services [Link]
- AWS Certified Solutions Architect – Associate – Amazon Web Services [Link]
- AWS Certified AI Practitioner – Amazon Web Services [Link]
- “The Ultimate Python Bootcamp” – Udemy (Instructor: Hitesh Choudhary) [Link]
- “AWS Certified Solutions Architect – Associate” Preparation Course – Udemy (Instructor: Stéphane Maarek) [Link]
- “AWS Certified AI Practitioner” Preparation Course – Udemy (Instructor: Stéphane Maarek) [Link]

ACCOMPLISHMENTS

- GATE 2025 Qualified (CSE) — Received official invitation from IIT Madras for M.Tech. admissions based on GATE qualification. [Link]
- Solved 150+ DSA problems across platforms such as LeetCode, GeeksforGeeks, and Coding Ninjas, strengthening data structures and algorithmic problem-solving skills.