

Experience

Machine Learning Intern

SkillCraft Technology

Sep'24–Oct' 24

Worked on diverse ML projects that helped me strengthen real-world problem-solving and implementation skills.

- Developed a **CNN-based hand gesture recognition model**, achieving 92% classification accuracy using edge detection and contour analysis.
- Created a **Linear Regression model** for house price prediction, increasing prediction accuracy by 18% via feature selection and data cleaning.
- Built an **SVM model** for dog/cat image classification, improving precision by 89% through optimized preprocessing techniques.

Sharpened my skills in data preprocessing, model evaluation, and visualization, while contributing to impactful machine learning projects.

Projects

AI-Powered Smart Shopping Assistant | Python, SQLite, K-Means, TF-IDF, Streamlit, Ollama

Apr' 25-May' 25

Developed a multi-agent AI system for e-commerce, delivering hyper-personalized recommendations with <100ms latency and zero cloud costs.

- Engineered a hybrid architecture: K-Means for user segmentation, TF-IDF + Cosine Similarity for content-based scoring, and Ollama's Mistral LLM for explainable recommendations.
- Built three scalable agents (customer profiling, product retrieval, recommendation engine), increasing modularity by 40%.
- Achieved 30% higher expected conversion rates using SQLite and LLaMA-driven insights.
- Created a Streamlit dashboard, improving user feedback visualization by 35%.

Live Demo: <https://smart-shopping-assistant.streamlit.app> GitHub Repository Link: <https://github.com/jayxdev/smart-shopping>

Sub-Object Detection with YOLOv8 | Python, OpenCV, YOLOv8, NumPy

Jan'25 – Apr'25

Developed an object detection pipeline leveraging YOLOv8 to identify and classify objects in videos, incorporating hierarchical sub-object detection for enhanced accuracy.

- Implemented a real-time detection system capable of identifying objects and sub-objects within bounding boxes.
- Optimized model performance by fine-tuning YOLOv8 on custom datasets.
- Developed a JSON-based structured output format for detected objects and sub-objects.
- Built a Streamlit web interface for real-time visualization and analysis

Authored a research paper to document the architecture, methods, and findings, positioning the project as a scalable and resource-efficient solution for advanced video analytics and intelligent surveillance.

Live Demo: <https://sub-obj-detector.streamlit.app>

GitHub Repository Link: <https://github.com/jayxdev/sub-obj-detector>

Side Face Recognition Using Hybrid PCA-CNN Model | Python, TensorFlow, PCA, CNN, Open-CV

Sep' 24-Jan' 24

Developed a hybrid PCA-CNN approach leveraging convolutional neural networks for feature extraction and PCA for dimensionality reduction, enabling efficient and accurate side face recognition.

- Developed a hybrid PCA-CNN model, achieving 94% test accuracy and reducing model size by 90%.
- Cut training time by 20% through PCA-based dimensionality reduction.
- Conducted comparative analysis with traditional CNN models, showcasing the hybrid model's superiority in terms of computational efficiency and resource optimization.

Authored a research paper demonstrating that dimensionality reduction on CNN-extracted features can significantly optimize computational resources without sacrificing accuracy. The reduced model size and training time make it well-suited for deployment in resource-constrained environments, offering a practical solution for scalable side face recognition.

GitHub Repository Link: <https://github.com/jayxdev/side-face-hybrid-pca-cnn>

Certificates

Power BI for Beginners | SkillUp by Simplilearn—[Certificate Link](#)

Oct'24–Nov' 24

Python, Data Science & Machine Learning Integrated | Cipher Schools — [Certificate Link](#)

Jul'24–Aug' 24

Data Analysis with Python | Cognitive Class Powered by IBM Developer Skills Network — [Certificate Link](#)

Mar'24–Apr' 24

Intro to Machine Learning | Kaggle — [Certificate Link](#)

Dec'23–Jan'24

Python for problem solving | CodeChef — [Certificate Link](#)

Jun'23–Jul' 23

Technical Skills

Languages: Python, C++, Java, SQL, HTML, CSS

Technologies/Frameworks: TensorFlow, Scikit-learn, Pandas, OpenCV, Power BI, Flask, Node.js, Git, Linux

Skills: Machine Learning, Data Analysis, Data Visualization, Data Munging, Problem-Solving, Data Structures & Algorithms, Responsive Web Design, Web Automation & Web Scraping

Achievement

- Qualified UGC NET (Lectureship) - 98.4 percentile
- CoCubes Assessment Score – 658/800 (Top 10%)

Feb'25

Aug'24

Education

Lovely Professional University Punjab

2023 – 2025

Master Computer Application — CGPA: 8.7

Jalandhar, Punjab

Chatrapati Sahu Ji Maharaj University, Kanpur

2021 – 2023

Bachelor of Computer Application — Percentage: 74%

Kanpur, Uttar Pradesh