





HUNAINA EHSAN

Computer Science Graduate

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SUMMARY

I am a Computer Science graduate with a profound interest in algorithm design and machine learning applications in Python. With hands-on experience in developing practical solutions through independent and collaborative projects, I excel in problem-solving, particularly in computer vision and deep learning domains

EDUCATION

BS in Computer Science 10/2021 – 06/2025 | Islamabad, Pakistan
National University of Sciences and Technology

EXPERIENCE

Computer Vision Intern 07/2025 – 08/2025 | Rawalpindi
NASTP, SDH, Alpha-2
Facial Recognition Repository 

- Implemented a pipeline using pretrained YOLO_v8 from hugging face for face detection and FaceNet Inceptionresnet_v1 for embeddings, enabling recognition from both recorded videos and real-time camera streams
- Achieved 98% micro-average and 77% macro-average accuracy, with mean detection time of 0.032s/frame and embedding time of 0.028s/frame
- Developed a frame-wise preprocessing and matching system, improving recognition stability under varied lighting, motion blur, and partial occlusions
- Tools Used: Python, OpenCV, YOLOv5, FaceNet (facenet-pytorch), NumPy, Pandas, PyTorch

SKILLS

- | | | |
|---------------------|----------------------------|------------------------|
| • C/C++ | • Deep Learning | • AI/ML |
| • Computer Vision | • Jupyter Notebook | • Keras |
| • MATLAB | • MRI | • Numpy |
| • OpenCV | • Pandas | • Python |
| • PyTorch | • Scikit-Learn | • SQL |
| • TensorFlow | • JavaScript | • Visual Studio Code |
| • Web/Data Scraping | • Reverse Engineering APIs | • Automation Pipelines |

PROJECTS

Dementia Detection Using Deep Learning with Multi-Modal Data Fusion

Detecting early signs of dementia using advanced machine learning techniques

- Combined MRI, cognitive scores & genetic data for early dementia detection
- Achieved 97% accuracy MRI GCPNet) and 89% accuracy (ensemble: TabNet, MultiGAT, Latent ODE
- Tools Used: Python, TensorFlow, PyTorch, OpenCV, NiBabel, FSL, matlab, pytorchgeometric

Crime Detection with Deep Learning

Developed a deep learning model for detecting crime patterns in video footage

- Applied Conv2dLSTM for multi-class crime video classification; 57% validation accuracy
- Tools Used: Python, TensorFlow, Keras, NumPy, Scikit-learn

Skin Cancer Detection with Deep Learning

Utilized cutting-edge deep learning algorithms for skin cancer detection

- Applied CNN & ResNet for multi-class classification; 55% accuracy
- Tools Used: TensorFlow, Keras, NumPy, Scikitlearn

Reinforcement Learning for MuJoCo Pusher Task - Comparative Analysis of algorithms

Compared PPO, TD3 and SAC algorithm performances on mujoco pusher

- Found PPO most accurate and stable, while TD3 was fastest but stuck in local maxima like SAC.
- Tools Used: Stable-Baselines3, PyTorch, MuJoCo

Water Consumption & Pump Analysis

Developed Python-based models to calculate and visualize water usage vs. pumped flow using Bernoulli's principle.

- Developed visualizations and anomaly detection (e.g., overestimation cases, flow-based consumption tracking).
- Tool Used: pandas, matplotlib, xlswriter

Ecobricks website

Built website from MERN stack and prototyping through figma.

- Developed a web platform promoting plastic recycling into ecobricks.
- Focused on UI/UX design and awareness-building for sustainability initiatives.
- Tools Used: MongoDB, Express.js, React.js, Node.js, GitHub, VS Code, Vercel, Figma

Sunlight Energy Retrieval

- Designed a data-driven system to optimize sunlight energy collection and usage.
- Applied algorithm design and analysis for energy efficiency improvement.

E-commerce Scraper & Shopify Sync

Reverse-engineered Nykaa's API to extract complete product catalog data and automated syncing to a Shopify store via REST API.

- Enabled reliable data transfer with retries, idempotent updates, and incremental refresh for accurate inventory and pricing.
- Tools Used: Python, Requests, Pandas, Shopify Admin REST API

CERTIFICATES

2025 Harvard Hackathon on Healthcare using Artificial Intelligence

- Pitched FYP idea at hackathon, presenting prototype + business model with strong clinical and societal impact.
- Highlighted AI-powered diagnosis, real-time monitoring, and caregiver integration, receiving positive feedback for innovation.