Laeeq Aslam

Machine Learning Engineer | AI & Edge Computing | Sustainable Systems
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Professional Summary

Machine Learning Engineer with **10+ years of experience** in **AI research, deep learning, and real-time deployment** across **academia, industry, and research**. Specializing in **sustainable AI systems, Edge AI,** and Computer Vision. I have **optimized models that improved efficiency by 30%** and **reduced inference time by 20%**. Proven expertise in **algorithm optimization, cloud-based model deployment, and hardware acceleration**. Passionate about **bridging AI and sustainability** for Industry 5.0 advancements.

Publications & Research

Published **8 journal** articles, **4 arXiv preprints**, **3 conference papers,** and **3 under review,** with 28 total citations. Recent publications as first author are as follows,

- **Physics-Informed Spatio-Temporal Network** with Trainable Adaptive Feature Selection for Short-Term Wind Speed Prediction. ***(Computers & Electrical Engineering,2025).***
- Dynamic **Optimization of Recurrent Networks** for Wind Prediction on Edge Devices. ***(IEEE Access, 2025).***
- **Hardware-Centric Exploration** of the Discrete Design Space in Transformer–LSTM Models for Wind Speed Prediction on **Memory-Constrained Devices**. ***(Energies,2025).***
- **Integrating Physics-Informed Vectors** for Improved Wind Speed Forecasting with Neural Networks. ***(Asian Control Conference, 2024).***

Under Review

- Wind Speed Prediction Using a **Dynamic Tree-structured Parzen Estimator** Optimized Shallow Hybrid Model. ***(Major Revision Completed and Resubmitted, Computers & Electrical Engineering).***
- A Distribution Matching Framework for **Zero-Shot Wind Speed Prediction** on Edge Devices in Unseen Locations. ***(Submitted, Engineering Applications of Artificial Intelligence).***
- **Perception-Informed Neural Network** for Highly Volatile Wind Speed Prediction. ***(In Write-Up Phase).***

Work Experience

Bond and Built Pvt Ltd, Pakistan

AI/ML Consultant - Edge Computing & Computer Vision | July 2024 – March 2025

- Led the development of a real-time **footwear analytics system** deployed across urban Pakistan.
- Scaled system to process **50,000+ daily inferences** with **60+ concurrent streams**.
- Implemented **data anonymization** and **secure transmission** protocols.
- Delivered actionable **market intelligence** for strategic material investments.

Central South University, China

PhD Researcher – Machine Learning & AI for Sustainable Systems | Sept 2020 – Present

- Developed **Physics-Informed Spatio-Temporal Network (PISTNet)**, achieving **up to 9.5% improvement in SMAPE** for wind speed forecasting.
- Optimized hybrid deep learning models, reducing **MSE by 48%** and computational costs by **86%,** with fewer **FLOPS**.
- Proposed **Adaptive Simulated Annealing with Memory-based Rejection for Recurrent Neural Networks Discrete Hyper-Parameter Space optimization**, reducing **MAE by 14.5%** in time-series forecasting.
- Contributed to the Key **R&D Program of Hunan Province, Project 2020WK2007**, focusing on optimizing energy integration and improving grid performance for wind energy storage.

DLISION, Pakistan

Machine Learning Engineer – Computer Vision & AI Deployment | May 2021 – Sept 2022

- Led **computer vision projects** focused on **semantic segmentation and real-time object detection**.
- Optimized **CNN-UNet & Swin UNet models**, improving **segmentation accuracy by 3%** using **Focal Loss**.
- Enhanced sports image classification accuracy by **7%** using **ResNet-50, ViT, and Swin Transformer**.
- Reduced **inference time by 20%** using **dynamic batching and ensemble pipelines** in **Triton Inference Server.**

International Islamic University, Pakistan

Higher Education Research Assistant – AI for Healthcare | March 2019 – Feb 2020

- Applied **Generative Adversarial Networks (GANs)** for **breast cancer detection**, improving classification accuracy.
- Conducted data augmentation techniques that **increased dataset diversity** and **enhanced model robustness**.

iUSE School of Engineering and Management Sciences, Pakistan

Lecturer & Lab Engineer – Embedded Systems & AI | Sept 2013 – Feb 2019

- Taking undergraduate courses related to **Embedded Systems**, **Programming,** and **Discrete Signal Processing**.
- Designed and developed an **Instrumentation & Measurement Lab** for **sensor-based data acquisition in MATLAB**.
- Led **student research projects** on **energy management, accident alerts, and secure electronic voting**.

Education

PhD in Control Science & Machine Learning | Central South University, China | 2020 – Present
MS in Electronic Engineering (Gold Medalist) | International Islamic University, Pakistan | 2015 – 2017

Technical Skills

Machine Learning & AI: Deep Learning | Computer Vision | Time-Series Analysis | Predictive Modeling.
Programming & Tools: Python | MATLAB | C++ | TensorFlow | PyTorch | Keras | OpenCV | Edge Impulse
DevOps & Deployment: Docker | AWS | Git | Jupyter Notebook | Triton Inference Server
Hardware & IoT: Raspberry Pi | NVIDIA Jetson | Arduino Nano BLE Sense
Data Analysis & Optimization: Pandas | NumPy | Matplotlib | Seaborn | Feature Engineering

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Key Projects & Research Contributions

- Deployed a **real-time edge-to-cloud footwear analytics pipeline** (YOLOv5 → DenseNet-121), processing **50k+ daily inferences** across urban Pakistan with **60+ concurrent streams.**
- **AI-Based Sports Analytics:** Enhanced **real-time player segmentation** using **U-NET models**, improving **inference time by 15%**.
- Developed and published the **keras-swin-unet** PIP package for satellite imagery segmentation and the **TimeMesh** library for efficient time series data preprocessing.

Awards & Honors

- Gold Medalist – MS in Electronic Engineering | International Islamic University.
- Hunan Provincial Government Funding for Research & Development (**Project 2020WK2007)**.
- Chinese Government CSC Scholarship for PhD Studies.