Saeed Ahmad

MACHINE LEARNING & COMPUTER VISION RESEARCHER

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Website | **Google Scholar** | **GitHub** | **LinkedIn** | **ORCID**

RESEARCH PROFILE

Artificial Intelligence researcher with 3+ years of experience in computer vision, multi-modeling, and efficient deep learning for the medical domain and industrial, practical applications, with deployment on embedded systems. First-author publication in *Knowledge-Based Systems* (IF 7.2) on multi-teacher cross-modal knowledge distillation. Current work spans low-level vision — turbulence mitigation, super-resolution, low-light enhancement, infrared–visible fusion, and multi-spectral object detection and tracking — deployed in real time on NVIDIA Jetson and Hailo-accelerated devices. Seeking opportunities for computer vision and machine learning.

RESEARCH INTERESTS

- **Knowledge distillation & model compression** — multi-teacher distillation, cross-modal transfer, compact student networks
- **Model optimization for edge deployment** — quantization, pruning, custom CUDA kernels, TensorRT, real-time inference on Jetson / Hailo
- **Medical image analysis** — segmentation, classification, and detection in clinical imaging
- **Multimodal & low-level vision** — image fusion, restoration, super-resolution, enhancement, detection, tracking
- **Continual learning** — catastrophic-forgetting mitigation, Kolmogorov–Arnold Networks, Vision Transformers

RESEARCH & PROFESSIONAL EXPERIENCE

AI Research Engineer
Nov 2024 – Present

IK Lab Inc., Geumcheon District, Seoul, South Korea

- Develop and deploy custom low-level vision models — atmospheric turbulence mitigation, super-resolution, low-light enhancement, infrared–visible fusion, object detection, vessel copilot, and more — for real-time embedded inference.
- Optimize models for NVIDIA Jetson and Raspberry Pi with Hailo accelerators using TensorRT and NVIDIA DeepStream, achieving real-time throughput on resource-constrained hardware.

TOOLS TensorRT, DeepStream, GStreamer, Jetson, Hailo, PyTorch, Docker, Shell scripting

Research Assistant
Sep 2022 – Oct 2024

AMI Lab, Korea National University of Transportation, Chungju-si, South Korea

- Designed a multi-teacher cross-modal knowledge-distillation framework for unimodal segmentation, reducing inference time and resource consumption while preserving clinical accuracy *(published in Knowledge-Based Systems, IF 7.2)*.
- Implemented cost-effective CNNs via INT8 quantization-aware training on embedded systems.
- Developed continual learning with Kolmogorov–Arnold Network-based Vision Transformers to mitigate catastrophic forgetting.
- Built unsupervised anomaly detection and localization for industrial settings using normalizing flows.

TOOLS PyTorch, TensorFlow, Scikit-Learn, Vision Transformers, KAN, LaTeX, Docker

Machine Learning Engineer
Jun 2022 – Aug 2022

DiveDeepAI, Islamabad, Pakistan

- Built a generalized ML pipeline for stock-market forecasting and a rule-based intelligent expert engine for market analysis.

TOOLS TensorFlow, Scikit-Learn, Experta, time-series analysis

Machine Learning Engineer *(Freelance)* Oct 2021 – Sep 2022
Fiverr — Remote

- Completed 50+ ML / CV / NLP projects for 30+ clients across 15+ countries; ranked Level 2 Seller with a 5-star average rating.

TOOLS PyTorch, TensorFlow, Keras, Scikit-Learn, Flask, GANs, NLP

EDUCATION

M.S. in Artificial Intelligence Sep 2022 – Jul 2024
Korea National University of Transportation, Chungju-si, South Korea

CGPA 4.38 / 4.50 — awarded the Excellent Grade Scholarship three consecutive times for a perfect 4.5 GPA.

Thesis Advancing Medical Image Segmentation Using Cross-Modal Knowledge Distillation and Hybrid CNN-Transformer.

Supervisor Prof. Jeonghwan Gwak

B.S. in Computer Science Sep 2018 – Jun 2022
Pakistan Institute of Engineering and Applied Science (PIEAS), Islamabad, Pakistan

CGPA 3.89 / 4.00

Thesis Machine Learning-Based Network Intrusion Detection System.

Supervisor Dr. Muhammad Abid Mughal

JOURNAL PUBLICATIONS

1. **Saeed Ahmad**, Zahid Ullah, and Jeonghwan Gwak. "Multi-Teacher Cross-Modal Distillation with Cooperative Deep Supervision Fusion Learning for Unimodal Segmentation." *Knowledge-Based Systems*, 2024. Impact Factor 7.2.

CONFERENCE PUBLICATIONS

1. Zheng Chen, Kai Liu, Jingkai Wang, **Saeed Ahmad**, et al. "The Fourth Challenge on Image Super-Resolution (×4) at NTIRE 2026: Benchmark Results and Method Overview." *IEEE/CVF CVPR Workshops (CVPRW)*, 2026. **6th overall · 4th in PSNR, Restoration Track 1.**
2. **Saeed Ahmad**, Namjung Kim, Junhwi Park, Changjook Park, Xufeng Hu, Jeonghwan Gwak. "Implementing Cost-Effective CNNs through INT8 Quantization-Aware Training on Embedded Systems." *Korea Next Generation Computing Society, Spring Conference*, 2024.
3. Sharjeel Masood, Changjook Park, **Saeed Ahmad**, Namjung Kim, Xufeng Hu, Jeonghwan Gwak. "Efficient Dynamic Pruning Technique for Reduction of Inference Time in Convolutional Neural Networks." *Korea Next Generation Computing Society, Spring Conference*, 2024. **Excellent Paper Award.**

SELECTED PROJECTS

- **csv-trans** — open-source Python package for multilingual bulk CSV translation; 25,000+ downloads on PyPI.
- **NTIRE 2026 ×4 Super-Resolution Challenge (CVPRW)** — ranked 6th overall and 4th in PSNR on Restoration Track 1 among 31 teams / 194 registrants.
- **YOLOv12 TensorRT (C++ / CUDA)** — high-performance object detection with GPU-accelerated non-maximum suppression.
- **Industrial radiator anomaly detection** — end-to-end real-time pipeline from annotation to optimized, containerized Flask deployment.
- **Video annotation pipeline** — integrated YOLOv8 + Segment Anything to automate dataset labeling, reducing manual effort by 80%.
- **Multi-task Whisper for Korean kids' speech** — fine-tuned with auxiliary heads for age, gender, and dialect classification on a ~1 TB Korean Children Dataset, achieving state-of-the-art performance.

TECHNICAL SKILLS

Languages	Python, C, C++
Frameworks	PyTorch, TensorFlow, Keras, Scikit-Learn, TensorRT
Tools & Platforms	Docker, Git / GitHub, Linux, FastAPI, Flask, Gradio
Edge & Optimization	TensorRT, INT8 quantization, pruning, knowledge distillation, NVIDIA Jetson, Hailo accelerator, DeepStream, GStreamer
Areas	Computer Vision, Deep Learning, Image Super-Resolution, Object Detection & Tracking, Multimodal Learning

HONORS & AWARDS

Excellent Paper Award, Korea Next Generation Computing Society — 2024
Excellent Grade Scholarship, perfect 4.5 / 4.5 GPA, three consecutive times — 2023–24
Professor-based Scholarship, NRF-funded projects, KNUT — 2022–24
2nd Position, Nationwide Cyber Security Hackathon Quiz — Ignite, Pakistan — 2021
Top 10 (7th), ETEA Entrance Test among 20,000+ candidates — Khyber Pakhtunkhwa — 2018

SERVICE & LEADERSHIP

Reviewer — Journal of Open-Source Software (JOSS); PLOS One
Founding President — PIEAS Cyber Security Club (2021–22)
ML / AI Lead — Google Developer Student Club, PIEAS (2021–22)

LANGUAGES

English Fluent · **Urdu** Native · **Hindi · Pashto** Conversational

REFERENCES

Prof. Jeonghwan Gwak
Associate Professor, Korea National University of Transportation
jgwak@ut.ac.kr

Prof. Asif Ullah Khan
Professor & Head, PIEAS AI Center, Pakistan
asif@pieas.edu.pk