Samad Riaz

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Profile

Computer Vision & Edge-AI Engineer with 3+ years of experience designing and deploying real-world vision systems for water safety, surveillance, and smart agriculture.

Professional Experience

Machine Learning Engineer — CIS Pvt Ltd, Islamabad (2025–Present)

- Architected portable CV-based microbial detection kits using microscopic imaging + CNN pipelines for drinking water safety.
- Reduced bacterial detection time from **24 hours → 5 hours.**
- Integrated predictive ML pipelines enabling early contamination alerts.
- Deployed optimized inference pipelines on Raspberry Pi edge devices.

Visiting Lecturer — Center of AI, UET Mardan (2025–Present)

- Mentored undergraduate students on C++ and Computer Vision.
- Supervised student CV mini-projects and code reviews.

ML Engineer — National Center of AI, UET Peshawar (2024–2025)

- Built plant growth stage recognition pipelines using CNN + YOLO.
- Developed CV models to monitor leaf health, canopy coverage & growth trends.
- Enabled automated climate control decisions increasing plant yield reliability.
- Designed cloud-connected dashboards for real-time visualization.

Research Associate — National Center of AI, UET Peshawar (Aug 2023 – Jun 2024)

- Designed and deployed a fully automated computer vision system for E. coli colony detection and counting integrated with **DelAgua water testing kits.**
- Developed CNN-based classification and colony counting models achieving **90%**+ detection accuracy.
- Automated colony enumeration and contamination alert workflows for laboratory and on-site water testing.

Junior AI-Engineer — Center for Intelligent System and Network Research, UET Peshawar (2022–2023)

- Built CV pipelines for criminal recognition, mob detection, flood & earthquake early-warning.
- Worked on multi-camera surveillance processing and event classification systems.
- Deployed CNN-based anomaly detection pipelines.

Engineering Intern — Pak Electron Limited (PEL)

- Assisted in power systems analysis and technical documentation.
- Supported engineering teams in equipment performance evaluation and reporting.

Engineering Intern — Pakistan Telecommunication Company Limited (PTCL)

- Gained hands-on exposure to **telecom network infrastructure, transmission systems, and field operations**

Education

MS in Artificial Intelligence — *University of Engineering & Technology, Peshawar*
2024 – 2026 | CGPA: 3.8 / 4.0

BSc in Electrical (Communication) Engineering — *University of Engineering & Technology, Peshawar*
2018 – 2022 | CGPA: 3.5 / 4.0

HSSC (Pre-Engineering) — Ghazali Science College, Charsadda
2016 – 2018 | 2nd Position in College

Publications

[1]. **S. Riaz**, A. Saghir, M. J. Khan, H. Khan, H. S. Khan, and M. J. Khan, "TransLSTM: A hybrid LSTM-Transformer model for fine-grained suggestion mining," Natural Language Processing Journal, p. 100089, Jul. 2024, doi: 10.1016/J.NLP.2024.100089.

[2]. Mansoor Khan, **Riaz**, S., & Gul Muhammad Khan. (2024). Drinking Water Monitoring: Computer Vision Kit for Early E. coli Detection. *International Journal of Innovations in Science & Technology*, *6*(5), 248–256. Retrieved from https://journal.50sea.com/index.php/IJIST/article/view/801

[3]. Zargham, Abdullah, Ihtisham Ul Haq, Tamara Alshloul, **Samad Riaz**, Ghassan Husnain, Muhammad Assam, Yazeed Yasin Ghadi, and Heba G. Mohamed. "Revolutionizing Small-Scale Retail: Introducing an Intelligent IoT-based Scale for Efficient Fruits and Vegetables Shops." Applied Sciences 13, no. 14 (2023): 8092.

[4]. Rahman, J. U., **Riaz**, S., & Salma. (2024). Stress Detection and Prediction Using CNNs from Electrocardiogram Signals. International Journal of Innovations in Science & Technology, 6(5), 207–215. Retrieved from https://journal.50sea.com/index.php/IJIST/article/view/795

[5]. Arif, T., Riaz, S., Shafiq, Z., & Khan, G. M. (2025, June). Computer Vision-Based Plant Growth Stages Analysis for Optimizing Crop Yield. In *IFIP International Conference on Artificial Intelligence Applications and Innovations* (pp. 283-296). Cham: Springer Nature Switzerland.

Awards & Recognitions

- **Speaker Award — ASME EFx UET Peshawar (Feb 2025)**
  Delivered a keynote on ***"AI in Agriculture"*** to students and industry experts. Introduced the Smart Plants Incubator and discussed its role in enabling climate resilience and entrepreneurship in vulnerable regions.

Technical Skills

Programming: Python, C/C++, MATLAB, R, Git/GitHub.
Computer Vision & Deep Learning: OpenCV, YOLO, CNNs, Vision Transformers, VideoMAE, TensorFlow, Hugging Face.
Machine Learning & Data: Scikit-Learn, Pandas, NumPy, Matplotlib.
Generative AI & LLM: Stable Diffusion, LoRA Models, RAG Systems, LangChain, FAISS.
Edge-AI & Embedded: Raspberry Pi, Jetson Nano, Arduino, Camera Pipelines, Environmental Sensors.
Deployment & Cloud: Flask/FastAPI, REST APIs, AWS EC2, Linux.
Design & Prototyping: SolidWorks (Intermediate), 3D Printing (CreatBot), Product Prototyping.
Documentation & Productivity: ***Grants Writing***, Technical Documentation, Research Papers, Reports, Microsoft Word, Excel, PowerPoint.

Courses and Certifications

- The **Raspberry PI** Platform and Python Programming for the Raspberry Pi (Coursera, 2022)
- Introduction to **TensorFlow** for Artificial Intelligence, Machine Learning, and Deep Learning (Coursera, 2021)
- Introduction to Programming with **MATLAB** (Coursera, 2021)
- CS107: **C++** Programming (Saylor.org)
- The Arduino Platform and C programming (Coursera, 2021)
- **Neural Network**s and Deep Learning (Coursera, 2021)
- **Python** for Data Science, AI &Development (Coursera, 2020)
- Introduction to Computers and Office Productivity Software (Coursera 2021)
- Python Basic (Coursera 2022)
- Introduction to the Internet of Things and Embedded Systems (Coursera)
- Building Arduino robots and devices (Coursera, 2020)
- Excel Crash Course (Corporate finance Institute, 2020)

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Selected Projects & Thesis

Computer Vision–Based Smart Weighing Scale — *BSc Final Year Project* (2021 – 2022)

- Built an automated retail weighing and billing system using **YOLOv4-based item recognition + load-cell integration.**
- Achieved **92%+ detection accuracy** for fruits and veg item recognition.
- Designed an interactive GUI enabling real-time product recognition and automated price calculation.

MS Thesis — Video-Based Child Activity Recognition *(Ongoing)*

- Developing a hybrid deep learning architecture combining **Vision Transformers, VideoMAE, and 3D CNNs.**
- Focused on temporal–spatial feature extraction and multi-model fusion for surveillance-grade action recognition.
- Targeting improved accuracy on real-world child safety and monitoring datasets

Semester Projects:

- Deep Learning-Base Traffic Sign Board Recognition.
- Facial Expression Recognition using convolution neural network.
- Pakistan Currency Recognition and Detection using deep learning.
- Detection of glasses on face using deep learning.
- Water level Controlled in water tank using transistor.
- 4-bit counter from flip flops.

Freelancer (July 2022 – Present)

https://www.fiverr.com/s/42xgLxy
https://www.upwork.com/freelancers/~01eaa008ed7252fded?mp_source=share

- Delivered end-to-end computer vision solutions for international clients on Fiverr & Upwork
- Built CV pipelines using YOLO, Faster-RCNN, CNNs, Stable Diffusion, and LoRA models
- Performed dataset engineering, preprocessing, model training, optimization, and deployment
- Deployed AI models on Raspberry Pi and Jetson Nano edge devices
- Produced professional technical documentation and project reports for clients