

# Fahad Ahmed Khokhar

(+39) 351-608-4234 | fahadahmed.khokhar@unifi.it | Personal Website | LinkedIn | GitHub | Florence, Italy | Date of Birth: 30-03-1997

## SUMMARY

---

AI Engineer and Researcher with a PhD in Computer Science from the University of Florence, specializing in Agentic AI, Large Language Models (LLMs), Retrieval-Augmented Generation (RAG), trustworthy AI, and multimodal learning systems. Experienced in designing and deploying autonomous AI agents with reasoning, planning, memory, tool orchestration, and decision-making capabilities across computer vision, NLP, and generative AI applications. Strong Python developer with hands-on expertise in PyTorch, TensorFlow, Hugging Face, Docker, SQL, and scalable AI deployment. Published researcher with an IEEE Best Paper Award and a strong track record in AI safety, federated learning, uncertainty-aware systems, and intelligent agent architectures. Based in Italy.

## AWARDS

---

### Best Paper Award

30th IEEE Pacific Rim International Symposium on Dependable Computing (PRDC)

Nov 2025

Seoul, South Korea

## TECHNICAL SKILLS

---

**Programming:** Python, C++, SQL, Java, JavaScript

**ML/DL:** Computer Vision, Transformers, Diffusion Models, Federated Learning, CNNs, Object Detection

**Frameworks:** PyTorch, TensorFlow, Keras, Hugging Face Transformers, MONAI, OpenCV

**Libraries:** NumPy, Pandas, Scikit-learn, Matplotlib, Seaborn

**Tools & Platforms:** Git, Docker, Linux, Anaconda, Weights & Biases, VS Code

**Databases:** PostgreSQL, MySQL, SQL, Query Optimization

## EXPERIENCE

---

### Data Scientist

AIGOT

Sep 2025 – Jan 2026

Pisa, Italy

- Developed Agentic AI systems using LLaMA and Mistral with multi-agent reasoning, memory, RAG, and tool integration.
- Fine-tuned and evaluated open-source LLMs on 50K+ domain-specific samples for Italian-language applications.
- Implemented end-to-end diffusion and generative AI pipelines for text-to-image and content generation workflows.

### Research Assistant

COMSATS University Islamabad

Feb 2019 – Jan 2022

Wah Cantt, Pakistan

- Led software development for HEC-sponsored robotic fish project for automated water disease detection
- Implemented computer vision models for real-time bacterial contaminant identification
- Co-authored Elsevier publication on federated learning for image processing

### Software Developer

Pakistan Ordnance Factories

Jan 2021 – Jan 2026

Wah Cantt, Pakistan

- Developed and optimized Oracle-based enterprise MIS applications serving 500+ users
- Automated reporting workflows, reducing manual data processing time by 40%

### Freelance AI Developer

Upwork

Jun 2019 – Aug 2022

Remote

- Delivered 10+ ML/DL projects including data pipelines, model training, and web scraping tools
- Contributed to academic manuscripts and technical documentation for AI research clients

## KEY PROJECTS

---

### Food Dish Generation System

Sep 2025 – Jan 2026

Deep Learning

Python, TensorFlow, Hugging Face Diffusers, LLMs

- Built text-to-image generation system using Stable Diffusion for food image synthesis
- Curated custom dataset of 10K+ dish images with LLM-generated captions
- Implemented full pipeline using Hugging Face Diffusers and transformer-based architectures

### Fail-Controlled Classifiers

Nov 2022 – Aug 2024

PhD Research – Trustworthy AI

Python, PyTorch, Scikit-Learn

- Designed safety-aware ML classifiers that reject uncertain predictions, improving reliability by 15%+
- Developed multiple FCC architectures evaluated on 8+ image and tabular benchmarks
- Published 3 papers (IEEE PRDC, ACM, Springer) including Best Paper Award winner

### Person Re-Identification using Federated Learning

Aug 2021 – Dec 2021

M.S. Thesis – Computer Vision

Python, PyTorch, OpenCV

- Developed privacy-preserving person re-ID system using federated learning across decentralized nodes
- Achieved competitive accuracy while preserving data privacy through distributed training

### Human Face Detection and Recognition

Jul 2017 – Jan 2018

Computer Vision

C++, OpenCV, Python, YOLO, TensorFlow

- Built drone-based face detection and recognition system achieving 93% accuracy from aerial angles
- Utilized YOLOv3 with pre-trained weights for real-time detection at 45-degree camera view

## EDUCATION

---

### University of Florence

Florence, Italy

Ph.D. in Computer Science (Trustworthy AI, Safety, Machine Learning)

Sep 2022 – Apr 2026

### COMSATS University Islamabad

Wah Cantt, Pakistan

M.S. in Computer Science (Computer Vision, Machine Learning)

Feb 2020 – Jan 2022

### COMSATS University Islamabad

Wah Cantt, Pakistan

B.S. in Software Engineering

Sep 2014 – Jun 2018

## JOURNAL PUBLICATIONS

---

1. **Khokhar, F. A.**, Zoppi, T., Ceccarelli, A., Montecchi, L., & Bondavalli, A. (2026). *Fail-Controlled Classifiers: A Swiss-Army Knife Toward Trustworthy Systems*. *Software: Practice and Experience*, 56(3), 239–259. Wiley.
2. **Khokhar, F. A.**, Zoppi, T., Cennini, L., Ceccarelli, A., & Bondavalli, A. (2026). *Safety Monitors for Black-Box Classifiers: Design, Framework and Benchmark*. *Scientific Reports*.
3. Cheema, M. N., Nazir, A., Harmanci, A., Harmanci, A. S., Cheema, Y., Masood, S., & **Khokhar, F. A.** (2026). *Large Language Models in Radiogenomics: A Comprehensive Survey of Applications from Imaging to Genetics*. *The Visual Computer*.
4. **Khokhar, F. A.**, Shah, J. H., Saleem, R., & Masood, A. (2025). *Harnessing Deep Learning for Faster Water Quality Assessment: Identifying Bacterial Contaminants in Real Time*. *The Visual Computer*, 41(2), 1037–1048. Springer.
5. Sayin, B., Zoppi, T., Marchini, N., **Khokhar, F. A.**, & Passerini, A. (2025). *Bringing Machine Learning Classifiers into Critical Cyber-Physical Systems: A Matter of Design*. *IEEE Access*.
6. Cheema, Y., Cheema, M. N., Nazir, A., **Khokhar, F. A.**, Li, P., & Ahmed, A. (2025). *A Novel Approach for Improving Open Scene Text Translation with Modified GAN*. *The Visual Computer*, 41(2), 869–881. Springer.
7. Rehman, R., Shah, J. H., **Khokhar, F. A.**, Ahmed, A., Saleem, R., & Najam, S. S. (2025). *Smart Monitoring: Employing Person Re-Identification to Uncover Suspicious Behavior*. *Signal, Image and Video Processing*, 19(1), 9–20. Springer.
8. Afzal, M., Shah, J. H., ur Rehman, S., **Khokhar, F. A.**, Yasmin, M., & Kadry, S. (2025). *Automated Soccer Event Detection and Highlight Generation for Short and Long Views*. *Multimedia Tools and Applications*, 84(26), 30971–30991. Springer.

9. Shah, J. H., Afzal, M., Riaz, S., Yasmin, M., Kadry, S., & **Khokhar, F. A.** (2025). *A Comprehensive Dataset of Soccer Event Images for Advancing Automatic Recognition Systems*. Data in Brief, 60, 111518. Elsevier.
10. Fatima, I., Shah, J. H., Saleem, R., Riaz, S., Rafiq, M., & **Khokhar, F. A.** (2024). *Transforming Medical Imaging: A VQA Model for Microscopic Blood Cell Classification*. IEEE Access.
11. Qadeer, N., Shah, J. H., Sharif, M., Dahan, F., **Khokhar, F. A.**, & Ghazal, R. (2024). *Multi-Camera Tracking of Mechanically Thrown Objects for Automated In-Plant Logistics by Cognitive Robots in Industry 4.0*. The Visual Computer, 40(12), 9063–9082. Springer.
12. **Khokhar, F. A.**, Shah, J. H., Khan, M. A., Sharif, M., Tariq, U., & Kadry, S. (2022). *A Review on Federated Learning Towards Image Processing*. Computers and Electrical Engineering, 99, 107818. Elsevier.

## CONFERENCE PUBLICATIONS

---

1. Khokhar, F. A., Zoppi, T., Shah, J. H. et al. (2025). *Orchestrating Fail-Safe, Black-Box Models within Federated Learning Scenarios*. Proceedings of the 30th IEEE Pacific Rim International Symposium on Dependable Computing (PRDC 2025). (**Best Paper Award**)
2. Zoppi, T., Atif, M., Khokhar, F. A., & Bondavalli, A. (2026). *Back to the Future: Refurbishing Critical Software Engineering to Enable Trustworthy Classification*. ACM Symposium on Applied Computing (SAC 2026).
3. Zoppi, T., Khokhar, F. A., Ceccarelli, A., & Bondavalli, A. (2024). *Position Paper—Bringing Classifiers into Critical Systems: Are We Barking Up the Wrong Tree?*. International Conference on Computer Safety, Reliability, and Security (SAFECOMP 2024). Springer.
4. Zoppi, T., Khokhar, F. A., Montecchi, L., Ceccarelli, A., & Bondavalli, A. (2024). *Fail-Controlled Classifiers: Do They Know When They Don't Know?*. 29th IEEE Pacific Rim International Symposium on Dependable Computing (PRDC 2024). IEEE.
5. Raza, M. R., Ahmed, S., Khokhar, F. A., & Varol, A. (2025). *Exploring the Potential of DeepSeek-R1 Model in Transforming Healthcare Solutions: An Overview*. 2025 13th International Symposium on Digital Forensics and Security (ISDFS). IEEE.

## CERTIFICATIONS

---

- Machine Learning Specialization – Stanford University (Coursera)
- Deep Learning Specialization – DeepLearning.AI (Coursera)

## LANGUAGES

---

**English:** Fluent (C2) | **Italian:** Basic (A2) | **Urdu:** Native | **Punjabi:** Native