

# IFZA IFZA

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## Introduction

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I am a Master's student in Computer Science at RPTU Kaiserslautern, Germany, specializing in Intelligence Systems and Software Engineering. Research Assistant at DFKI working on transformer-based object detection and semi-supervised learning for document layout analysis and medical imaging.

## Education

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### RPTU Kaiserslautern, Germany

Oct 2023 – Present

*Master of Science (M.Sc.) in Computer Science*

*Kaiserslautern, Germany*

- German Grade: 2.2/4.0
- Relevant Courses: Machine Learning I, Very Deep Learning, Generative AI Engineering, Practical Machine Learning & NLP with AWS, Image Generation and Enhancement, Data Visualization.

### University of Punjab, Gujranwala, Pakistan

2018 – 2022

*Bachelor of Science in Information Technology*

*Gujranwala, Pakistan*

- German Grade: 1.3/4.0
- Relevant Courses: Object Oriented Programming, Data Structures and Algorithms, Software Engineering, OO Analysis & Design, Database Systems, Web Engineering, Operating Systems, Information Systems.

## Technical Skills

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Programming Languages: Python, C#, C++, JavaScript, HTML, CSS

Tools and Technologies: MS Visual Studio, Android Studio, NetSuite Oracle, MS SQL

Soft Skills: Team Player, Communication, Creativity, Self Learning, Critical Thinking

## Work Experience

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### Research Assistant (Hiwi), DFKI Kaiserslautern

Apr 2024 – Present

*Master's Research*

*Kaiserslautern, Germany*

- Contributed to the design, and deployment of end-to-end computer vision pipelines for document layout analysis and medical image analysis for anomaly detection across the LUMINOUS and AIRISE research projects.
- Assisted in the implementation and evaluation of transformer-based object detection and semi-supervised learning methods, improving model performance and robustness.
- Worked alongside PhD candidates and senior researchers on experimental design, result analysis, and drafting submissions for peer-reviewed conferences and journals.

### Supply Chain Assistant, Warehousing Specialist, DIGISQUAD

Mar 2023 – Oct 2023

*Operations Role*

*Gujranwala, Pakistan*

- Streamlined order fulfillment and inventory management processes, reducing processing time and improving stock accuracy.
- Strengthened supplier relationships and improved logistics efficiency, enabling faster delivery cycles.
- Proactively resolved operational issues, ensuring smooth warehouse operations.

### Acquisition Support Specialist, DIGISQUAD

Apr 2021 – Aug 2022

*Market Research Role*

*Gujranwala, Pakistan*

- Conducted product research and market analysis using analytics tools like Helium10 to identify high-potential opportunities.
- Supported content creation, sales tracking, and competitor analysis to optimize acquisition strategies.
- Analyzed product metrics, refining acquisition processes and improving campaign efficiency by 15%.

## Seminars

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### Adversarial Attacks to Counterfactual Explanations

*Master's Seminar*

- Surveyed adversarial approaches for counterfactual explanations across multiple data modalities, focusing on interpretability, robustness, scalability, and ethical challenges in trustworthy AI.

## Academic Projects

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### End-to-End Semi-Supervised Document Layout Analysis

#### *Master's Project*

- Proposed an end-to-end semi-supervised document layout and table detection framework using transformer-based fan attention and denoising techniques.
- Evaluated on PubLayNet, PubTables-1M, and TableBank, achieving state-of-the-art performance across multiple label ratios 10%, 30%, 50%.
- Outperformed prior transformer-based methods, achieving up to 96.2 mAP on PubLayNet and 95.5 mAP on PubTables-1M while using fewer queries.

### Literature Review Using Multi-Agent System

#### *Master's Project*

- Designed a multi-agent system leveraging the LLM Gemma2-9B-IT and the Groq API to automatically download, summarize, and generate literature reviews from research papers.
- Implemented specialized agents for paper extraction, reading, summarization, review writing, and human-in-the-loop.
- Evaluated generated reviews against manually written reviews using cosine similarity and ROUGE metrics, demonstrating moderate semantic similarity with low content overlap.
- Implemented round-robin agent communication with termination conditions to ensure efficient and stable multi-agent collaboration.

### Share To Care – Web-Based Donation System

#### *Bachelor's Final Year Project*

- Designed and developed a web-based donation platform using ASP.NET MVC and MS SQL Server to connect donors, NGOs, volunteers, and donees.
- Implemented role-based authentication and authorization for donors, NGOs, volunteers, and donees, ensuring secure access and data separation.
- Enabled donation customization including online cash donations, tangible item contributions, progress tracking, and Google Maps-based pickup location selection.
- Built NGO management features such as volunteer task assignment, email notifications, donation reporting, and donor–donee communication support.

## Publications

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Tahira Shehzadi, **Ifza Ifza**, Didier Stricker, Muhammad Zeshan Afzal, "FD-SSD: Semi-supervised Detection of Bone Fenestration and Dehiscence in Intraoral Images", *MIUA 2025*, pp. 3–14.

Tahira Shehzadi, **Ifza Ifza**, Didier Stricker, Muhammad Zeshan Afzal, "DocSemi: Efficient Document Layout Analysis with Guided Queries", *ICCV Workshops 2025*, pp. 7536-7546.

Tahira Shehzadi, **Ifza Ifza**, Didier Stricker, Muhammad Zeshan Afzal, "Efficient Additive Attention for Transformer-based Semi-supervised Document Layout Analysis", *ICCV Workshops 2025*, pp. 3495-3503.

Tahira Shehzadi, **Ifza Ifza**, Marcus Liwicki, Didier Stricker, Muhammad Zeshan Afzal, "Semi-Supervised Object Detection: A Survey on Progress from CNN to Transformer", *Sensors*, vol. 26, no. 1, p. 310, 2026.

Tahira Shehzadi, Rabya Noor, **Ifza Ifza**, Marcus Liwicki, Didier Stricker, Muhammad Zeshan Afzal, "Knowledge Distillation in Object Detection: A Survey from CNN to Transformer", *Sensors*, vol. 26, no. 1, p. 292, 2026.

## Certifications

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AWS Academy Graduate – Machine Learning Foundations (Jun 2025)

AWS Academy Graduate – Machine Learning for Natural Language Processing (Oct 2025)

## Interests

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Calligraphy, Art and Craft, Traveling