

Education

- 2nd Mar-20 **Sejong University**, Seoul, South Korea.
- 18th Feb-22
 - M.S in Computer Science and Engineering
 - Thesis: Face Pyramid Vision Transformer
 - GPA: 4.25/4.5, [Presentation Link](#)
- 1st Feb-14 **Federal Urdu University of Arts, Sciences & Technology**, Karachi, Pakistan.
- 23rd Apr-18
 - B.S. in Computer Science
 - Title: Framework for Passenger Seat Availability Using Face Detection in Passenger Bus
 - GPA: 3.53/4.0

Publications

- NeurIPS 2025 **MoAE: Mixture-of-Augmentation Experts for Vision Models.**
[Khawar Islam](#), Arif Mehmood, Naveed Akhter
Advances in Neural Information Processing Systems (NeurIPS 2025) ([Under Review](#))
- TIP 2025 **GenMix: Effective Data Augmentation with Generative Diffusion Model Image Editing.**
[Khawar Islam](#), Muhammad Zaigham Zaheer, Karthik Nandakumar, Arif Mehmood, Naveed Akhter
IEEE Transactions on Image Processing (IEEE TIP 2025) ([Under Review](#))
- ICLRw 2025 **Context-Guided Responsible Data Augmentation with Diffusion Models.**
[Khawar Islam](#), Naveed Akhter
In International Conference on Learning Representations (ICLRw), 2025
- CVPR 2024 **DiffuseMix: Label-Preserving Data Augmentation with Diffusion Models.**
[Khawar Islam](#), Muhammad Zaigham Zaheer, Arif Mahmood, Karthik Nandakumar
In IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2024
- BMVC 2022 **Face Pyramid Vision Transformer.**
[Khawar Islam](#), Muhammad Zaigham Zaheer, Arif Mahmood
In British Machine Vision Conference (BMVC), 2022
- CVPR 2021 **Image Compression with Recurrent Neural Network and Generalized Divisive Normalization.**
[Khawar Islam](#), Dang Lien Minh, Sujin Lee, Hyeonjoon Moon
In IEEE Conference on Computer Vision and Pattern Recognition Workshop (CVPRw), 2021
- IVCNZ 2021 **Face Recognition Using Shallow Age-Invariant Data.**
[Khawar Islam](#), Sujin Lee, Dongil Han, Hyeonjoon Moon
In Image and Vision Computing New Zealand (IVCNZ), 2021
- IMAVIS 2020 **Person Search: New paradigm of Person Re-Identification: Recent Works.**
[Khawar Islam](#)
In journal of Image and Vision Computing (IMAVIS), Elsevier, 2020

Research and Work Experience

- 24th-June-25 **Senior Scientist - Autonomy AI**, Neubility, Seoul, South Korea.
- [Present](#) **Tools:** YOLOv11, Cursor AI, Sparse R-CNN, Grounded-SAM, OWL-ViT, Panoptic DETR, Promptable Segmentation, SegFormer, KernelFormer, Swin-UniNet, DeepLab Series
- Working on [domain-specific](#) generative data augmentation for improving robot performance.
 - Working on [Object detection Class-imbalance](#) problem for improving current Neubility model.
 - Designing single quantized model [Object Detection + Segmentation](#) for delivery robot.
 - Introducing adversarial perturbation concept in current Object Detection model [FGSM+Fractal](#).
 - Working on depth estimation via [Depth Anything](#) to estimate depth from footpath to road.
 - Data collection processes, ensuring [high-quality datasets](#) for training and validating models.
 - Plan and execute research projects, ensuring timely delivery of milestones and deliverables.
 - Stay up-to-date with latest R&D in CV and DL, and apply latest techniques to solve problems.

- 1th-Ap-24 **Chief Technology Officer (CTO) - Gen AI**, Upendi, Seoul, South Korea.
- 30th-June-25 **Tools:** Stable Diffusion XL Refiner, AnimeGANv2, FLUX, IP-FaceID-Plus, PhotoMaker, Realistic Vision, IP-Adapter, T2IAdapter, ControlNet, ADEtailer, EmoStyle, PromptCap
- I was employed in a part-time capacity from April 1, 2024 to March 31, 2025.
 - Personalized/Consistent character generation for [visual storytelling](#) across different scenes.
 - Lead team of [three developers](#) to build full-fledge product with agile methodology.
 - Introduced [character captioning dataset](#) to fine-tune Stable Diffusion in Generative AI domain.
 - Introduced a new Automated diary with specific character generation like [BTS diary](#).
 - Meeting with different [CEOs and Investor](#) to illustrate the demo and current competition.
 - Data collection processes, ensuring [high-quality datasets](#) for training and validating models.
 - Mentor junior researchers, and interns, providing guidance on Generative AI domain.
 - With Patent & Law Firm, we are preparing for patent and filing a [Personalized FaceID](#).
- 4th-Ap-22 **Research Scientist - AI**, Coremax Technology, Seoul, South Korea.
- 30th-Ap-25 **Tools:** YOLO v8, ResNet, LLMs, Chat GPT, GPT-Neo, Claude, Anime Style, CLIP, Log Analysis, IP-Adapter, Stable Diffusion, SmartEdit, FLUX, InstructPix2Pix, PhotoMaker, StoryDiffusion
- Worked on [Large Language Models \(GPT, NEO\)](#) for parsing Unsupervised log data.
 - Developed Memory, CPU and Hardware forecasting model via [Vision Transformer](#).
 - Construct [Hangul dataset \(10M\)](#) and trained different OCRs to recognize handwritten samples.
 - Learning Visual Features without [Label/Image-Text](#) pairs data via Self-Supervised methods.
 - Described project ideas to [Team Lead/CTO](#) related to project with diagrammatic form.
 - Introduced [EleutherAI's/Pythia LLM](#) to analysis DDOS attacks in unstructured data.
 - Trained different ViTs, CNNs for [Image Classification and Object Detection](#) problems.
 - Built UI via [Gardio/Streamlit](#) for projects to show full-fledged demo to the client.
 - Managed code on internal [GitHub](#) with proper commit messages and branches for easiness.
- 15th Ap-19 **Research Associate**, Video Surveillance Lab, NUCES-FAST, Karachi, Pakistan.
- 10th Mar-20 **Tools:** VGG-Face, Google FaceNet, OpenFace, Facebook DeepFace, DeepID, ArcFace, Dlib.
- Developed [Age-Invariant](#) Deep Neural Network for Asian faces via OpenFace (CMU).
 - Worked on [Person Re-Identification/Person Search](#) via videos captured from CCTV
 - Implemented ECCV2018 for [License Plate Recognition](#) for videos in unconstrained scenarios
 - Meeting with government/private institution for [Data Collection](#) and guidance.
 - Data collection and preprocessing of missing children from [Sarim Burney Trust International](#).
 - Teaching and mentoring [BS students](#) to conduct research related to specific topic.
 - Write clear and concise [technical documentation](#) and present solutions to stakeholders.
 - Evaluate the performance of CV models and develop methodologies for [model comparison](#).
 - Lead [two developers](#) to design full-fledge demo with Web Portal and Mobile App.
- 1st Aug-18 **Research Assistant**, Information System Research Group, FUUAST Karachi, Pakistan.
- 15th Feb-19 **Tools:** C#, Visual Studio, DevExpress for UI Design
- Planning and execution of research projects, e.g [literature reviews](#), data collection, and analysis.
 - Assisting in the preparation of [research proposals](#), grant applications, and progress reports.
 - Maintaining complete research records, including databases and other documentation.
 - Analyze research data using [statistical tools](#) and present findings in a clear and concise manner.
 - Improve [research paper writing](#) and story-line to help junior researchers in their papers.
 - Teach [undergraduate students](#) how to think about new idea and selection of topic.
 - Providing training and mentoring to teaching assistants and junior lecturers.
 - Participating in [training opportunities](#) and initiatives at the institution.
- 1st Mar-17 **Senior Executive - Application Development**, Axact, Karachi, Pakistan.
- 30th Jul-18 **Tools:** Swift, Xcode Editor, Alamofire, RealmSwift, SDWebImage, MessageKIT
- Designing, developing, and maintaining iOS applications using [Swift programming](#) languages.
 - Writing clean, efficient, and maintainable code that [follows best practices](#) and coding standards.
 - Troubleshooting and debugging issues, and implementing fixes to ensure smooth functioning.
 - Participate in [Agile development process](#), attend sprint planning, stand-ups, and retrospectives.
 - Providing technical guidance and mentorship to junior team members, as needed.
 - Worked on [MVC and singleton pattern](#), real-time push notifications, Firebase, realm
 - Optimizing [computer vision algorithms](#) for performance and memory usage on mobile devices.
 - Maintaining and improving existing codebases, including refactoring and bug fixing.
 - Developing and maintaining [image processing pipelines](#) and data processing workflows.

Honors and Achievements

- 2021 **NeurIPS Support**, Sponsored by Naver Labs Europe, DeepMind and Google AI.
- 2020 **Full Tuition Fee Waiver**, School of Computer Engineering, Sejong University.
- 2020 **Prof. Stipend**, CVPR Lab, Sejong University.
- 2020 **Conference Travel Grant**, Ministry of Planning Commission, Pakistan.
- 2018 **Merit Scholarship for Bachelor Degree**, Quaid-e-Azam Aligarh Society, Karachi.
- 2016 & 2017 **Most Valuable Professional Award**, C-SharpCorner, India.
- 2016 **Laptop Awarded, Prime Minister Pakistan Program**, Karachi, Pakistan.

Summer and Winter Schools

- 2022 **OxML School**, Oxford Machine Learning Summer School.
- 2022 **NYU AI School**, New York Artificial Intelligence School, USA.
- 2021 **MLSS**, Machine Learning Summer School, Taipei, Taiwan.
- 2021 **EEML**, Eastern European Machine Learning Summer School.

English Proficiency and Relevant Courseworks

- IELTS-AC 6.5** Listening 7.5, Speaking 6.5, Writing 6.5, Reading 6.0
- A+** Introduction to Deep Learning, Advanced Deep Learning, Advanced AI
- A0** Machine Learning, Topics in Machine Learning, Data Science
- A** Data Structure and Algorithms, Linear Algebra, Numerical Computing

Technical Skills

- IP Algorithms** Segmentation, Filter Design, Noise Removal, Compression, Super Resolution
- Object Det** SSD, YOLO-NAS, YOLOX, Faster R-CNN, DETR, GroundingDINO, YOLOv8
- DL techniques** Tracking, Optical Flow, Particle Filtering, Pose Estimation
- CV Algorithms** Image Classification and Detection, Tracking, Siamese Networks
- Soft. Control** JIRA, Agile, Scrum and GIT or Subversion
- Lang** Python, Keras, JAVA, Unix Shell Scripting
- Deployment** Docker and Kubernetes
- Editor** Visual Studio Code, PyCharm, Jupyter Notebook
- OS** WINDOWS 10, Ubuntu 18.04, Ubuntu 20.04, MAC OSX
- APIs** PyTorch, TensorFlow, Caffe, OpenCV, Flask, Django

References

Dr. Zaigham Zaheer

Research Fellow, Mohamed bin Zayed
University of Artificial Intelligence, UAE
Research Mentor
✉ zaigham.zaheer@mbzuai.ac.ae

Prof. Arif Mahmood

Information Technology University,
Lahore, Punjab
Research Mentor
✉ arif.mahmood@itu.edu.pk

Prof. Muhammad Atif Tahir

National University of Computer &
Emerging Sciences, Karachi, Pakistan
Research Mentor
✉ atif.tahir@nu.edu.pk