

EDUCATION

- **University of Central Florida (UCF)** Orlando, FL
PhD in Computer Engineering Aug/2020 - Dec/2024
 - **Computer Vision:** Deep Learning, Generative AI, Diffusion Models, AI Security, 3D Computer Vision.
- **University of Central Florida (UCF)** Orlando, FL
MS in Computer Engineering CGPA 3.875/4.00 Aug 2020 - Aug 2024
- **Shanghai Jiao Tong University (SJTU)** Shanghai, China
MS in Electrical Engineering CGPA 3.87/4.00 Aug 2016 - Dec 2018
- **National University of Sciences and Technology** Islamabad, Pakistan
BS in Electrical Engineering, CGPA 3.56/4.00 Sep 2010 - June 2014

RECENT RESEARCH PROJECTS (1st Author)

- **3DEgo: 3D Editing on the Go!(ECCV 2024 accepted):** We introduce **3DEgo** to address a novel problem of directly synthesizing photorealistic 3D scenes from monocular videos guided by textual prompts. [Project Link]
- **LatentEditor (ECCV2024 accepted):** Groundbreaking approach for editing neural fields using denoising diffusion models, introducing a novel delta score method for precise, local editing in 3D scenes. Tested on multiple 3D datasets, bridging the gap between textual instructions and high-quality 3D editing. [Project Link]
- **Free Editor (ECCV 2024 accepted) :** A novel training-free 3D scene editing technique, addressing multi-view style inconsistency in T2I diffusion models. Using an Edit Transformer for intra-view consistency and interview style transfer, enhancing editing speed and efficiency. [Project Link]
- **Medical Diffusion Models:** Development of advanced diffusion models for medical applications. [GitHub Link]
- **Federated Learning for Video Understanding:** Efficient algorithms for federated learning in video understanding, contributing to industrial human-robot interaction. [GitHub Link]
- **Continual Learning with Noisy Labels:** Innovative approaches for continual learning in environments with noisy labels, enhancing robustness in machine learning. [GitHub Link]
- **Out of Distribution Detection:** Advanced research in out-of-distribution detection, focused on enhancing model robustness. [GitHub Link]
- **Text Guided Video Editing using Stable Diffusion:** Cutting-edge development in text-guided video editing using stable diffusion techniques. [Project Link]

EXPERIENCE

- **Axon Enterprises Inc., Arizona, USA** Jan. 2025 - Present
AI Research Scientist II
 - **Futuristic AI Technologies:** Leading, defining the scope, implementing, and delivering production-grade AI solutions to save lives.
- **Axon Enterprises Inc., Arizona, USA** Sept. 2024 - Dec. 2024
Research Scientist Intern
 - **MLLM Development:** Developed and implemented cutting-edge Generative AI solutions for video advertising, specializing in Image-to-Video (I2V), Text-to-Video (T2V), Text-to-Image (T2I), and LipSync technologies. Leveraged advanced AI models to transform static images and text into dynamic video content, enabling rapid, high-quality ad creation tailored to client needs.
- **Meta Inc., Menlo Park, CA, USA** May. 2024 - Aug. 2024
Machine Learning Intern
 - **Genrative AI Applications:** Developed and implemented advanced techniques to enhance the performance of Large Language Models (LLMs) on multimodal tasks, including visual question answering and image captioning. Designed and trained Multimodal Large Language Models (MLLMs) to create a Smart Reply System for Facebook Stories, enabling context-aware and engaging automated responses. These contributions streamlined user interactions and demonstrated the potential of multimodal AI in improving user experience and communication efficiency.

- **Samsung Research, USA**

Sept. 2023 - May 2024

Generative AI Researcher

- **3D AR/VR Applications:** Developed advanced 3D AR/VR algorithms and systems.
- **3D Scene:** Evaluated and optimized ML models for 3D applications like NeRF and Gaussian Splatting on next-generation Galaxy devices.
- **Gen AI:** Developed efficient video generation and editing algorithms leveraging diffusion models.
- **Research:** Actively contributed to innovation by developing prototypes, research papers, and patents.

- **Microsoft Inc., USA**

Summer, 2023

Machine Learning Research Intern

- **Efficient Multi-Modal Applications:** Development of efficient multi-modal machine learning models.

- **MengBaby Inc., Shanghai, China**

Jan 2019 - Mar 2020

Software Engineer-Computer Vision

- **Counterfeiting Detection and Healthcare Solutions:** Led the development of a counterfeiting app based on deep learning with 98.99% client-reported precision. Planned market expansion for major clients such as Castrol and Kohler. Developed healthcare solutions using deep learning, contributing to a successful \$20 million funding round in 2019.

SKILLS

- **Technologies:** Scikit-learn, PyTorch, Vision Transformers, GANs, Deepfakes, Pandas, NumPy, SciPy
- **Programming Languages:** Python, MATLAB, Java, C++, Shell scripting
- **Tools:** Git, LINUX terminal, Windows bash programming, AWS Cloud, Google Cloud
- **Machine Learning:** Deep Learning, Computer Vision, GANs, Diffusion Models, Action Recognition, NLP, Vision Transformers, Privacy Preservation, Federated Learning

SELECTED PUBLICATIONS

[HTTPS://SCHOLAR.GOOGLE.COM/CITATIONS?USER=HGJD_XUAAAAJ&HL=EN](https://scholar.google.com/citations?user=HGJD_XUAAAAJ&hl=en)

- [1] **Khalid, Umar**, Hasan Iqbal, Nazmul Karim, Jing Hua, and Chen Chen. LatentEditor: Text Driven Local Editing of 3D Scenes. *ECCV*, 2024.
- [2] **Khalid, Umar**, Hasan Iqbal, Nazmul Karim, Jing Hua, and Chen Chen. 3DEgo: 3D Editing on the Go! *ECCV*, 2024.
- [3] **Khalid, Umar**, Nazmul Karim, Hasan Iqbal, Jing Hua, and Chen Chen. Free-Editor: Zero-shot Text-driven 3D Scene Editing. *ECCV*, 2024.
- [4] **Khalid, Umar**, Hasan Iqbal, Saeed Vahidian, Jing Hua, and Chen Chen. CEFHRI: A Communication Efficient Federated Learning Framework for Recognizing Industrial Human-Robot Interaction. In *2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 10141–10148. IEEE, 2023.
- [5] Nazmul Karim, Abdullah Al Arafat, **Umar Khalid**, Zhishan Guo, and Nazanin Rahnavard. Augmented Neural Fine-Tuning for Efficient Backdoor Purification. *ECCV*, 2024.
- [6] **Khalid, Umar**, Hasan Iqbal, Chen Chen, and Jing Hua. Unsupervised anomaly detection in medical images using masked diffusion model. In *International Workshop on Machine Learning in Medical Imaging*, pages 372–381. Springer Nature Switzerland Cham, 2023.
- [7] **Khalid, Umar**, Nazmul Karim, Mohsen Joneidi, Chen Chen, and Nazanin Rahnavard. SAVE: Spectral-Shift-Aware Adaptation of Image Diffusion Models for Text-guided Video Editing. *arXiv preprint arXiv:2305.18670*, 2023.
- [8] **Umar Khalid**, Hasan Iqbal, Azib Farooq, Jing Hua, and Chen Chen. SPF-4D: A Progressive Sampling Framework for View Consistent 4D Editing. *CVPR Submission*, 2025.
- [9] **Umar Khalid**, Hasan Iqbal, Azib Farooq, Jing Hua, and Chen Chen. EVLM: Self-Reflective Multimodal Reasoning for Cross-Dimensional Visual Editing. *CVPR Submission*, 2025.
- [10] **Khalid, Umar**, Ashkan Esmaeili, Nazmul Karim, and Nazanin Rahnavard. Rodd: A self-supervised approach for robust out-of-distribution detection. In *2022 IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, pages 163–170. IEEE, 2022.