NUMAN ZAFAR

CONTACT INFORMATION

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RESEARCH INTERESTS

VR developer | Machine learning | Exploring the crossroads of technology to create next-gen experiences. Passionate about bridging the realms of virtual reality and machine learning to create immersive experiences and drive innovation. Excited to collaborate with like-minded professionals and explore the limitless possibilities at the intersection of VR and ML.

EDUCATION

Clarkson University, USA — **July 2021 – May 2026**
Ph.D. Computer Science
CGPA: 3.67/4.00

Clarkson University, USA — **July 2021 – May 2024**
MS Computer Science

University of Jinan, China — **Sep 2019 – May 2021**
MS Computer Science
CGPA: 3.2/4.0

PMAS Arid Agriculture University Rawalpindi, Pakistan — **Sep 2014 – Sep 2018**
BS Computer Science
CGPA: 3.45/4.00

PUBLICATIONS

[1] **Numan Zafar**, Natasha k. Banerjee, Sean Banerjee "Understanding How Prior Experience With VR Systems Influence Task Completion" 7th IEEE International Conference on Artificial Intelligence & Virtual Reality (AIxVR 2025). **Submitted**

[2] **Numan Zafar**, Natasha k. Banerjee, Sean Banerjee "Understanding the Impact of Cross-Device Familiarity in Virtual Reality Interaction" 7th IEEE International Conference on Artificial Intelligence & Virtual Reality (AIxVR 2025). **Submitted**

[3] Mingjun Li**, Numan Zafar**, Natasha k. Banerjee, Sean Banerjee "Evaluating Deep Networks for Detecting User Familiarity with VR from Hand Interations" 6th IEEE International Conference on Artificial Intelligence & Virtual Reality (AIxVR 2024).
DOI: 10.1109/AIxVR59861.2024.00036

[4] L.Cui, M.Liu, R.Wang, **N.Zafar** "Novel Attention-Based Framework for Person Re-identification in Video Surveillance" 7th International Conference on SmartRail, Traffic and Transportation Engineering (ICSTTE 2023).
https://doi.org/10.1007/978-981-97-3682-9_72

[5] M.U. Hassan, **Numan Zafar**, H. Ali, I.Yaqoob, SAA. Alaliyat, IA. Hameed "Collaborative Filtering Based Hybrid Music Recommendation System" 15th International Conference on Information Technology and Applications (ICITA 2021).
DOI: 10.1007/978-981-16-7618-5_21

[6] M.M.Irfan, S.Ali, I.Yaqoob, **Numan Zafar** "Towards Deep Learning: A Review on Adversarial Attacks" 1st IEEE International Conference on Artificial Intelligence (ICAI 2021).
DOI: 10.1109/ICAI52203.2021.9445247

[7] I.Yaqoob, M.U.Hassan, D.Niu, M.M.Irfan, **Numan Zafar**, X.Zhao. "Efficient Deep Learning approach to address Low resolution Person Re-Identification" 2020 4th International Conference on Vision, Image and Signal Processing (ICVISP 2020) in Bangkok.
doi.org/10.1145/3448823.3448848.

[8] R.Li, Y.Zhang, D.Niu, G. Yang, **Numan Zafar**, C. Zhang, X.Zhao. "PointVGG: Graph convolutional network with progressive aggregating features on point clouds," Neurocomputing.
DOI: 10.1016/j.neucom.2020.10.086. (**IF: 5.719**).

WORK EXPERIENCE

The Terascale All-sensing Research Studio (TARS), Clarkson University, USA — **April 2022 – Present**

Research Assistant, Virtual Reality and Deep Learning

- Demonstrated experience in designing and developing VR applications, simulations, or environments, integrating machine learning elements.
- Experience in collecting and preprocessing data from VR environments for machine learning model training
- Using machine learning to analyze user behavior and preferences within VR applications. i.e., Body Movement and interaction.
- Understanding of VR UI/UX principles to create intuitive and immersive user interfaces within virtual environments.
- Familiarity with various VR platforms, including Oculus, HTC Vive.

Shandong Provincial Key Laboratory of Network-Based Intelligent Computing, University of Jinan, China — **Sep 2019 – May 2021**

Research Assistant, Computer Vision and Deep Learning

- Image and Object Retrieval
- Medical Imaging and Machine Learning

PMAS Arid Agriculture University Rawalpindi, Pakistan — **Mar 2016 – Aug 2016**

Teacher Assistant, Analysis of Algorithm & Object-Oriented Programming

PROJECTS

VR Application: As mission critical applications in healthcare and education are realized in the future metaverses, ensuring user security becomes an important challenge. I developed a VR door combination lock for the Oculus Quest that enables a person to use controller free natural hand interactions to open a combination door lock. Initially, I collected the data from 14 users (7 VR experienced and 7 non-VR experienced) and trained deep learning models on it. Furthermore, I will extend the data collection around 50 to 60 users and will train the deep learning models to authenticate the users.

VR Gym Application: In a 2-person VR development team, I played a key role in designing and implementing a VR gym experience. My responsibilities included collecting data using sEMG sensors and conducting in-depth analysis to optimize user experience. This experience not only honed my skills in sEMG data collection and analysis but also provided valuable insights into collaborative VR development.

Android: Book Corner App (Final Year Project at Undergraduate Level)
ASP.Net: Student Web Portal System (Semester Project at Undergraduate Level)
ASP.Net: Online Shopping & Cart System (Semester Project at Undergraduate Level)

ONLINE COURSES

- **Deeplearning.ai** – Neural Networks and Deep Learning
- **IBM Cognitive Class** – Python for Data Science
- **IBM Cognitive Class** – Machine Learning with Python
- **IBM Cognitive Class** – Deep Learning Fundamentals
- **IBM Cognitive Class** – Deep Learning with TensorFlow
- 3 days' workshop on AI using Deep Learning from a faculty of Waterloo at University of Jinan, China

ACHIEVEMENTS & AWARDS

- Badminton Tournament Winner organized by Clarkson University Graduate Student Association (CUGSA 2022).
- Winner of Annual 100 minutes of code challenge (2018)
- Student Affairs Co-Ordinator (2016-2018)
- Certificate of Merit: Batsman of the tournament Award (2017), Inter-campus Tournament

SKILLS

VR Platform & SDKs: Unity 3D, Meta Quest, HTC Vive
Programming: Python, C/C++, C#
sEMG Data Collection & Analysis
Public Library: PyTorch, Tensorflow, Keras, OpenCV
Environments & IDE: Linux, Windows, PyCharm, Jupyter Lab, Visual Studio
Languages: English (fluent), Mandarin (basic), Urdu (native)