Muhammad Hasham Qazi

Karachi, Sindh, Pakistan

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Research Interests (Slides)

My research interests encompass Human-Computer Interaction and Computer Graphics, with a particular focus on Extended Reality (XR/VR/AR/MR). I am keen on exploring Applied Machine Learning and Multimodal Interactions within the context of XR. I particularly enjoy working on projects related to Virtual Agents, Social VR, and Human-AI Interaction. In the context of areas of applications, I am most interested in the domains of Education, Training, Collaborative Work, and Context-Aware Interactions within XR. With experience in both the software and hardware aspects of HCI, I bring a comprehensive approach to my work, bridging both domains in my projects.

Education

Habib University **Aug. 2019 – May 2023**

Bachelor of Science in Electrical Engineering *Karachi, Pakistan*

- **GPA:** 3.88/4.00
- **Class Rank:** 1
- **Awards:**
    * 65% Merit-based Scholarship, High Academic Achievement Scholarship Fall 2020 & Spring 2021
    * Dean's List (Top 10% of School) - Fall 2020, Spring 2021, Spring 2023
    * Best Capstone (Final Year Project) Award
    * Dean's Medal Award (Highest CGPA in Electrical Engineering)
- **Capstone Thesis:** A Virtual Reality-based training platform for emergency fire handling services
- **Capstone Advisors:** Dr. Farhan Khan (Habib University), Dr. Jeeeun Kim (Texas A&M University), Dr. Edgar J. Rojas-Munoz (Texas A&M University)
- **Thesis presented at:** Texas Human-Computer Interaction (TxHCI) Seminar (Virtual), 20th International Conference on Frontiers of Information Technology (FIT'23)
- **Extracurricular Activities:** Chapter Lead - Habib University Mindstorm Chapter, Core Team Member - HUCon 4Ever, Treasurer - The Multiverse Club, Graphic Designer - Google DSC x CSEC Habib, Graphic Designer - Tezhib Undergraduate Research Journal, Design Team Member - HUCon 3000

Publications

[1] Developing a VR-based Training Platform for Emergency Fire Handling Services Using Unity 3D

Muhammad Hasham Qazi, Farhan Khan, Jeeeun Kim, Edgar J. Rojas-Munoz.

Proceedings of 2023 20th International Conference on Frontiers of Information Technology (FIT), IEEE.

10.1109/FIT60620.2023.00028

[2] AccessLens: Auto-detecting Inaccessibility of Everyday Objects

Nahyun Kwon, Qian Lu, **Muhammad Hasham Qazi**, Joanne Liu, Shu Kong, Jeeeun Kim

CHI '24: Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems

10.1145/3613904.3642767

[3] Introducing VAIFU: A Virtual Agent for Introducing and Familiarizing Users in VR

Muhammad Hasham Qazi, Muhammad Palize Qazi

2023 4th International Conference on Computing, Mathematics and Engineering Technologies (iCoMET).

10.1109/iCoMET57998.2023.10099242

[4] A Comparative Survey of Solutions to Russel's Paradox

Fizza Rubab, Shamsa Hafeez, **Muhammad Hasham Qazi**, Mujtaba Hassan Syed, Badar Irfan Azeemi, Aeyaz Jamil Kayani
2023 4th International Conference on Computing, Mathematics and Engineering Technologies (iCoMET).
10.1109/iCoMET57998.2023.10099262

(Under Review) Towards Personalized 3D User Interface Authentication in Virtual Reality

Muhammad Hasham Qazi, Farhan Khan

(WIP) Applying Synthetic Data Refinement through Unpaired Image-to-Image Translation on Multi-Fidelity Synthetic Data

Muhammad Hasham Qazi, Muhammad Aqib Khan, Mohammad Hasan Tariq, Syed Talal Wasim, Syed Nouman Hasany, Muhammad Farhan

Work Experience

Habib University **Feb. 2024 – Jun. 2024**

Research Assistant (Part-time), Graduate School Curation Program (GSCP) *Karachi, Sindh*

- Coordinated student progress and faculty interactions, including conducting discussion sessions, conducting workshops, mentoring EE/CE/CS students on their research, grading assignments, and creating lecture materials for the GSCP Research Seminar course.
- Developed and implemented algorithms for student-faculty matching and ranking, finalized mappings based on data analysis, and managed project documentation.
- Managed communications, including drafting emails, organizing faculty research seminars, compiling research project lists, and creating budget charts for GSCP activities.
- ***Mentees:*** Laiba Zehra, Raahim Hashmi, Bismaa Behlim, Hamad Abdul Razzaq, Hammad Bin Zahoor, Syed Asghar Abbas Zaidi

Astera Software **Jul. 2023 – Present**

Product Research and Documentation Executive *Karachi, Sindh*

- Oversaw the entire Technical Demonstration Video production pipeline from conception to final product as a manager and leader.
- Spearheaded comprehensive product research and conducted competitor analysis to identify market trends and opportunities.
- Contributed to the AI Research and Development team, working on creating innovative AI solutions for unstructured data extraction and writing research papers.
- Crafted detailed documentation encompassing textual, slide-based, and video formats to elucidate product features.
- Piloted initiatives in User Experience Design and played an instrumental role in developing new product engagement strategies.

FortunaXR (www.fortunaxr.com) **Mar. 2023 – Present**

Founder *Karachi, Sindh*

- Founded FortunaXR to develop VR education materials tailored for corporate professionals and South-East Asian students.

Cloud Primero Pakistan Pvt Ltd. **Mar. 2023 – May. 2023**

Corporate Innovation Intern *Karachi, Sindh*

- Worked with the Corporate Innovation Department, developing key innovative strategies and project initiatives.

Texas A&M University **Aug. 2022 – Feb. 2024**

Remote Visiting Student – HCIED Lab *Karachi, Sindh*

- Actively contributed to the lab's research, application development, and manuscript work.
- Advisor: Dr. Jeeeun Kim, PhD Student: Nahyun Kwon

Texas A&M University **Jun. 2022 – Jul. 2022**

Research Intern – HCIED Lab *Karachi, Sindh*

- Conducted research for a project on Addressing Inaccessible Everyday Objects in Indoor Scenes by 3D Assistive Designs with Fine-grained Object Type Detection.
- Advisor: Dr. Jeeeun Kim, PhD Student: Nahyun Kwon

Habib University **Jan. 2022 – May. 2022**

Peer Tutor – Electric Circuit Analysis *Karachi, Sindh*

- Assisted students in grasping the core concepts of Electric Circuit Analysis.

EdAcumen **Jun. 2021 – Jan. 2022**

Research Intern *Karachi, Sindh*

- Delved into research on 21st-century skills including Design Thinking, Problem Solving, and Critical Thinking.
- Played a key role in developing course outlines and resources for the 'Global Perspectives and Research' A Levels course.

SkyEnd Digital **Nov. 2020 – Feb. 2021**

Graphic Designer *Karachi, Sindh*

- Designed engaging advertisements aligned with product aesthetics and branding.

Skills and Certifications

General: UX Design, Design Research, HCI Research - Qualitative and Quantitative Methods, XR Development, CAD Design, Graphic Design, Design Thinking, AI (ML, DL, Gen AI), PCB Design, Video Editing, Technical Writing, Curriculum Development, Project Management, EDI (X12, HL7), Data Warehousing, Collaboration, and Teamwork.

Programming Languages: Python (NumPy, Scikit-learn, Pandas, Matplotlib, Tensorflow, Keras, PyTorch, Flask), OpenGL, C++ (SDL, Unreal Engine), C# (Unity 3D, WPF, .NET), C (Arduino), MATLAB, SQL, HTML, CSS, JavaScript.

Software: Unity 3D, Unreal Engine, Figma, PTC Creo, OrCAD PSpice, LabView, Adobe Illustrator, Adobe Photoshop, Adobe Premiere Pro, SolidEdge, Blender 3D, Markdown, Git, LaTeX.

Certifications: Google UX Design Professional Certificate, IBM Design Thinking Practitioner, XR For Everybody Specialization, Understanding Research Methods (UoL), Social and Behavioral Responsible Conduct of Research (CITI Program), Social-Behavioral-Educational Comprehensive (CITI Program).

Notable University Projects

Project War

- Developed a tower defense game using SDL/C++

Autonomous Football Playing Robot

- Crafted a robot for a Microcontrollers course, focusing on the robot's mechanical design and module-specific coding.

Arms and Legs

- Conceived a modular student chair, rooted in User Research, adaptable for home and university.

Presidium

- Designed and developed a smart helmet paired with an app for post-accident alerts and driving analytics.

Wind-Turbine Analog Dual Position Control System

- Designed an analog control system to manipulate the Pitch Axis and axial rotation of a Wind Turbine head. Crafted the system's mathematical model and worked on the physical prototype.

Case Study on GMV Engine

- Undertook a case study on a GMV engine with a 1.1 Bore-Stroke Ratio, delving into its CAD design and kinematic analysis.