Muhammad Hasham Qazi

Karachi, Sindh, Pakistan

✉ qazihasham@gmail.com in linkedin.com/in/m-hasham-qazi/ Bē Behance 🎓 Google Scholar ○ Personal Website

Research Interests (Project Slides)

My research interests lie at the intersection of Human-Computer Interaction (HCI), Artificial Intelligence (AI), Computer Graphics (CG), and Extended Reality (XR). I focus on exploring Intelligent 3D User Interfaces, Multimodal Interactions, and Context-Aware Systems. My work in XR centers on designing solutions for education and training, enhancing learning experiences, and enabling immersive collaboration through Social XR. Additionally, I am interested in interactive Virtual Agents, 3D Human Motion Generation, and Procedural Generation. Ultimately, I aim to create intuitive, AI-driven interactive XR systems that foster dynamic collaboration between humans and machines.

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 Batch of 2023)

- **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)
- **Leadership Positions:** Chapter Lead - Habib University Mindstorm Chapter *(Game Dev Club)*, Core Team Member - HUCon 4Ever *(Comic Con Event)*, Treasurer - The Multiverse Club *(Media Fandom Club)*
- **Other Extracurricular Activities:** Graphic Designer - Google DSC x CSEC Habib *(Computer Science Club)*, Graphic Designer - Tezhib Undergraduate Research Journal *(Humanities Undergraduate Research Journal)*, Design Team Member - HUCon 3000 *(Comic Con Event)*

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), IEEE.
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), IEEE.
10.1109/iCoMET57998.2023.10099262

[5] (Accepted, To Be Published) LLM-Guided Speech Processing for 3D Human Motion Generation

Muhammad Hasham Qazi, Sandesh Kumar, Farhan Khan

IEEE 2024 26th International Multitopic Conference (INMIC)

[6] (Under Review) Designing Modular Virtual Reality Firefighting Training Simulations

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

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

Muhammad Hasham Qazi, Farhan Khan

WORK EXPERIENCE

Astera Software
Researcher, Astera AI Lab

Aug. 2024 – Present
Karachi, Sindh

- Enhanced knowledge retrieval for AI applications through Retrieval-Augmented Generation methodologies.
- Developed a RAG-enhanced multi-agent architecture as a co-pilot system that enabled natural language-driven creation of low-code data pipelines for Astera Software.
- Implemented document-denoising techniques to improve OCR accuracy and designed workflows for unstructured data extraction, enabling efficient information retrieval from complex sources.
- Focused on accessible AI integration within existing systems, enhancing user interaction through NLP-powered interfaces.

Habib University
Research Assistant (Part-time), Graduate School Curation Program (GSCP)

Feb. 2024 – Jun. 2024
Karachi, Sindh

- Coordinated student progress and student-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
Product Research and Documentation Executive, Product Strategist (EDI)

Jul. 2023 – Present
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 Data Science and AI Research and Development team, working on low-code prototypes for AI and Data Science applications.
- 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 designing prototypes for new product features.

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

Founder   *Karachi, Sindh*
- Founded FortunaXR to develop VR training and education materials tailored for corporate professionals.

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

XR Development/Computer Graphics: XR Development (Unity XR Interaction Toolkit, Meta XR Platform SDK, Unity AR Foundation, Vuforia, Unreal Engine, Blender 3D), C++ (SDL, Unreal Engine), C# (Unity 3D).

HCI/Design: UX Design, HCI Research - Qualitative and Quantitative Methods, Human Factors Research, Design Research & Design Thinking, Graphic Design, Figma, Adobe Illustrator, Adobe Photoshop.

AI/ML/DL: AI (ML, DL, Gen AI with a focus on GANs and LLMs), Python (NumPy, Scikit-learn, Pandas, Matplotlib, Tensorflow, Keras, PyTorch, Flask).

Electrical and Hardware Design: CAD Design (PTC Creo, SolidEdge) , 3D Printing, PCB Design, Microcontroller Programming (C - Ardunio, Python - Raspberry Pi), MATLAB (& Simulink), OrCAD PSpice, LabView.

Miscellaneous: SQL, C# (WPF, .NET), HTML, CSS, JavaScript, Markdown, Git, LaTeX, Video Editing (Adobe Premiere Pro), Technical Writing, Curriculum Development, Project Management, EDI (X12, HL7), Data Warehousing, Collaboration, and Teamwork.

Relevant 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), Computer Graphics with Modern OpenGL and C++, Deep Learning A-Z 2024.

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.

TALKS AND WORKSHOPS

Excel Workshop - *GSCP*

Developing VR-based Training Simulations for Emergency Fire Handling Services - *Texas Human-Computer Interaction Seminar*

Introduction to 3D Art and Blender 3D Workshop - *Habib University Mindstorm Chapter*

How to Ace the ECE Capstone Project? Workshop - *ECE*

Project Accessibility Lens - *Poster Presentation Texas A&M University (Habib University Research Abroad Program 2022)*

Introducing VAIFU: A Virtual Agent for Introducing and Familiarizing Users in VR - *IEEE iCoMET 2023*

LLM-Guided Speech Processing for 3D Human Motion Generation - *IEEE INMIC 2024*