Tafadzwa Joseph Dube

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Summary

As a Human-Computer Interaction (HCI) researcher, my aim is to make computer applications usable, secure, and enjoyable. My primary research interest is input and interaction in augmented and virtual reality. My other interests include smart cities and applications for civic engagement.

Education

PhD in Electrical Engineering and Computer Science *University of California, Merced* ***Supervisor:** Dr. Ahmed Sabbir Arif*	*2018—Current* *(GPA 4.00/4.00)*
MSc Computer Engineering *Istanbul Technical University, Turkey* ***Supervisor:** Dr. Gökhan İnce*	*2015—2017* *(GPA 3.75/4.00)*
BSc (HON) Computer Science *National University of Science and Technology, Zimbabwe*	*2009—2013* *(Class 2.1)*

Experience

Graduate Researcher *Human-Computer Interaction Lab, University of California, Merced*	*Developing and evaluating input and interaction techniques for virtual reality,* *Recruiting participants for user studies,* *Conducting user studies using quantitative and qualitative research methods*	*2018-present*
Teaching Assistant *University of California, Merced*	*Tutored students and graded exam papers for the courses:* *Introduction to computer applications,* *Introduction to Human-Computer Interaction*	*2018— 2020*
Front-end Developer *Shearwater Adventures*	*Developed an interface to automate bridge and bungee activities; developed an augmented reality application for the bridge museum; developed a virtual reality-based application to tour the Victoria falls bridge*	*2017—2018*
Researcher *UX Lab, Istanbul Technical University, Turkey*	*Developed and evaluated augmented and virtual reality applications for choreography generation; assisted in the design and usability testing of interfaces in the lab*	*2015— 2017*

Computers Instructor *Sizane High School, Zimbabwe*	*Taught web development and computer network courses*	*2014—2014*
Systems Analyst Intern *IT Department, National University of Science and Technology, Zimbabwe*	*Worked as a library systems administrator; Linux administrator; network administrator; and web developer*	*2011—2012*

Industry Certifications

Cisco Certified Network Associate (CCNA)

Skills & Attributes

Statistics tools	*SPSS, NCSS*
Programming	*PHP, C#, Java, C++*
Web applications	*HTML5, WebGL, JavaScript, React, CSS*
Programs	*Unity3D, MATLAB, Visual Studio, Arduino*
Operating System	*Windows, Linux (Redhat and Derbian distributions)*
Mobile applications	*Native (Android), Hybrid (Cordova, React Native)*

Network Implementation and administration

Languages

English *Ndebele* *Shona* *Turkish*

Projects

- *Input and Interaction in virtual reality using a digital finger wearable device | current*
  Developing and evaluating a digital finger wearable device for input and interaction in virtual reality.
- *Mid-air text input in virtual reality augmented with ultrasonic haptic feedback | current*
  Developing and evaluating mid-air text entry in virtual reality augmented with ultrasonic haptic feedback.
- *Mid-air selection gestures augmented with ultrasonic haptic feedback | 2021*
  Developing and evaluating different mid-air selection gestures which were augmented with ultrasonic haptic feedback. The purpose was to investigate the performance of these gestures with and without haptic feedback.
- *Gesture typing technique in virtual reality using a finger wearable device| 2020*
  Developing Shapeshifter, a thimble based virtual reality gesture typing method. The thimble is made up of a pressure sensor to detect contact force and an optical sensor to detect finger movement. The thimble is worn on the index finger.
- *Developing text entry techniques for virtual reality | 2019*
  Developing and evaluating different keyboards and techniques for typing in virtual reality. The purpose was to identify the factors that impact text entry in virtual reality.

- *Augmented reality-based interface for choreography generation | 2017*
  Developed an augmented reality-based interface for choreography generation. The interface uses marker based augmented reality. Choreographers can design and test different choreography designs using both virtual and physical objects.
- *Virtual reality-based interface for choreography generation | 2017*
  Developed a virtual reality-based interface for choreography generation. It has the same functionality as the above augmented reality interface. The interfaces were evaluated and compared with a desktop and mobile application.
- *3D virtual art gallery with augmented reality functionality | 2013*
  Developed a 3D web based virtual art gallery for showcasing Zimbabwean artifacts. The application has an augmented reality functionality that allows users to superimpose the artifacts onto the real world.

Publications

1. *Tafadzwa Joseph Dube, Yuan Ren, Hannah Limerick, Scott MacKenzie, Ahmed Sabbir Arif. 2022. Push, Tap, Dwell, and Pinch: Evaluation of Four Mid-Air Selection Methods Augmented with Ultrasonic Haptic Feedback. In Proceedings of the 2022 ACM Interactive Surfaces and Spaces Conference (ISS 2022). ACM, New York, NY, USA, to appear.*

2. *Tafadzwa Joseph Dube, Kevin Johnson, Ahmed Sabbir Arif. 2022. Shapeshifter: Gesture Typing in Virtual Reality with a Force-based Digital Thimble. In CHI Conference on Human Factors in Computing Systems Extended Abstracts (CHI EA 2022). ACM, New York, NY, USA, Article 230, 1–9.*

3. *Tafadzwa Joseph Dube, Ahmed Sabbir Arif. 2020. Impact of Key Shape and Dimension on Text Entry in Virtual Reality. In Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems (CHI EA 2020). ACM, New York, NY, USA, 1–10.*

4. *Tafadzwa Joseph Dube, Ahmed Sabbir Arif. 2019. Text Entry in Virtual Reality: A Comprehensive Review of the Literature. In Kurosu M. (Eds.), Human-Computer Interaction. Recognition and Interaction Technologies (HCII '19), Lecture Notes in Computer Science, 11567. Springer, Cham, Switzerland, 419-437.*

5. *Tafadzwa Joseph Dube, Gökhan İnce, 2019. "A novel interface for generating choreography based on augmented reality." International Journal of Human-Computer Studies 132 (2019): 12-24.*

6. *Tafadzwa Joseph Dube, Gökhan Kurt, Gökhan Ince, 2017. A Comparative Assessment of User Interfaces for Choreography Design, Proceedings of the International Conference on Advances in Computer-Human Interactions (ACHI), pp. 53-61.*

Presentations

1. *May 2022, Shapeshifter: Gesture Typing in Virtual Reality with a Force-based Digital Thimble. CHI Conference on Human Factors in Computing Systems (CHI), New Orleans, USA*

2. *February 2020, Presenting a Mid-air Text Input Technique in Virtual Reality to USA Congressman Jim Costa, Merced, California*

3. *March 2017, A Comparative Assessment of User Interfaces for Choreography Design, The Tenth*

International Conference on Advances in Computer-Human Interactions (ACHI), Nice, France

4. *October 2016 An Augmented Reality based Interface for Choreography Generation, 6th International Conference on "Innovations in Learning for the Future", Istanbul, Turkey*

Awards

2021, Graduate Student Opportunity Program Fellowship

2014, Turkish Government Scholarship

Activities & Interest

- *Soccer* • *Handball* • *Visual Arts*
- *Member-National Society of Black Engineers (NSBE)*
- *Member-Association of Computing Machinery- ACM SIGCHI*
- *Member-Bulawayo Technology Hub*
- *(University of California, Merced) Graduate Student Association Public Relations Officer 2019-2020*
- *Zimbabwe Students Association in Turkey (ZIMSAT) Public Relations Officer 2016-2017*
- *(NUST Zimbabwe) Student Representative Council External Affairs Officer 2012-2013*
- *(NUST Zimbabwe) Campus Sustained Dialogue Network Projects 0fficer 2011-2012*

References

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