Ricardo E. Gonzalez Penuela

Curriculum Vitae/Resume

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My research interests lie in designing useful interactive systems focusing on empowering people with disabilities. As of today, I have worked together with people with visual impairments, including blind and people with low vision, to improve the accessibility of 3D virtual environments, AI powered systems, and Mobile Cameras. Furthermore, my colleagues and I have come up with novel ways of interacting in Virtual Reality, and 3D printed models using Augmented Reality.

Education

2021.1– Present **Doctor of Philosophy (Ph.D.) in Information Science**, *Information Science Department, Cornell Tech, Cornell University, New York, United States*

2015.1– 2019.12 **B. Eng. in Systems and Computer Engineering**, *Department of Systems and Computer Engineering, Universidad de Los Andes, Bogota, Colombia*

Research Work and Publications

2022.10 ***Hands-On: Using Gestures to Control Descriptions of a Virtual Environment for People with Visual Impairments****: Accepted paper to appear in* ***UIST2022***

Ricardo E. Gonzalez Penuela*, Wren Poremba, Christina Trice, & Shiri Azenkot. While researchers have explored how to make navigation and object perception more accessible in VR, none have offered a natural way to request descriptions of objects, nor control the flow of auditory information. We present a haptic glove that PVI can use to request object descriptions with their hands through hand gestures.*

2022.10 ***Uncovering Visually Impaired Gamers' Preference for Spatial Awareness Tools Within Video Games****: Accepted paper to appear in* ***ASSETS '22*** *(26.5% acceptance)*

Authors: Vishnu Nair, Shao-en Ma, ***Ricardo E. Gonzalez Penuela****, Yicheng He, Karen Lin, Mason Hayes, Hannah Huddleston, Matthew Donnelly, Brian A. Smith. We investigated four leading approaches to facilitate spatial awareness for visually impaired gamers within a 3D video game. We uncover what is the most important information for visually impaired gamers to gain spatial awareness, and how well our spatial awareness tools provide it.*

2022.10 ***Understanding How People with Visual Impairments Take Selfies: Experiences and Challenges****: Accepted poster to appear in* ***ASSETS '22*** *(59% acceptance)*

Ricardo E. Gonzalez Penuela*, Paul Vermette, Zihan Yan, Cheng Zhang, Keith Vertanen, & Shiri Azenkot. Selfies are a pervasive form of communication in social media. PVI want to participate in social media just like their sighted counterparts, so it is important to ensure that selfie-taking is accessible. We contribute design guidelines that researchers and designers can implement for creating accessible selfie-taking applications.*

2021.10 ***Towards a Generalized Acoustic Minimap for Visually Impaired Gamers**: Demo in **UIST2021** (Overall acceptance 21%)*

*Authors: Vishnu Nair, Shao-en Ma,Hannah Huddleston, Karen Lin, Mason Hayes, Matthew Donnelly, **Ricardo E. Gonzalez Penuela**, Yicheng He, Brian A. Smith. We developed a prototype with four acoustic minimap techniques which would enable visually impaired gamers gain spatial awareness of a game environment.*

2020.4 ***Molder: An Accessible Design Tool for Tactile Maps**: Paper in **CHI2020** (24.3% acceptance)*

*Authors: Lei Shi, Yuhang Zhao, **Ricardo E. Gonzalez Penuela**, Elizabeth Kupferstein, Shiri Azenkot. Molder is an accessible design tool for interactive tactile maps, an important type of printed materials that can help visually impaired students learn O&M skills.*

2019.10 ***Tactiled: Towards more and better tactile graphics using machine learning**: Poster in **ASSETS '19** (58% acceptance)*

***Gonzalez, R.**, Gonzalez, C., & Guerra-Gomez, J. A. (2019). Tactiled. The 21st International ACM SIGACCESS Conference on Computers and Accessibility - ASSETS 2019. Presented at the The 21st International ACM SIGACCESS Conference.*

2019.8 *Markit*

*Lei Shi, & **Ricardo E. Gonzalez Penuela**. (2019, November 2). rgonzalezp/Markit: Markit V1.0 (Version V1.0). Zenodo. http://doi.org/10.5281/zenodo.3526177*

Research Community Involvement

Community

2021.1–Present *XR Access Research Network. Working closely together with Professor Shiri Azenkot, Co-Founder of XR Access, to run all activities related to the XR Access Research Network. This includes:*

Organizing, recruiting speakers, and hosting the **XR Access Research Network Seminar**. We have brought over 7 community leaders in the space of XR Accessibility to share their work.

Mentoring in the **REU site** (Research Experience for Undergrads) program **hosted by the XR Access Research Network** and **funded by the NSF**, Summers of 2021, and 2022. At both opportunities, fully-funded undergrad students collaborated in projects that have become submissions/fully-published papers at significant conferences (ASSETS,CHI, UIST) or that are currently in submission.

Recruiting speakers, and hosting the **Research to Practice Panel** at the **XR Access Symposium 2022**.

Peer Reviewing

Reviewer at Mobile HCI 2022.

Awards and Media

Fellowships & Grants

Fall 2022–Fall 2023 *Recipient of the Digital Life Initiative (DLI) **Doctoral Fellowship**. "The Program engages students in systematic inquiry into ethical and political implications of the digital age. Such inquiry centers on issues – e.g. fairness, security, privacy, and accountability – that concern existing and emergent digital technologies."*

Media

2019.6 *Note on **Assistive Technologies** work in Colombian newspaper **El Espectador**: "Colombian engineers develop tools to help blind people"*

Teaching Job Experience

Fall 2022 *Teacher assistant for class CS 5650: **Virtual and Augmented Reality**, **Cornell Tech**, with Professor Harald Haraldson*

Spring 2021 *Teacher assistant for class INFO 5305: **User Experience and User Research methods**, **Cornell Tech**, with Professor Shiri Azenkot*

Research Job Experience

2019.5–2019.8 ***Research Assistant Intern** at **Cornell Tech** at the Enhancing Ability Lab (**Accessibility**) with Professor Shiri Azenkot, "Summer Undergraduate **Research Fellowship**"*

2019.8–2020.12 ***Research Assistant** at **Cornell Tech** at the Enhancing Ability Lab (**Accessibility**) with Professor Shiri Azenkot*

*Presented **Molder** demo at **ASSETS '19** on behalf of Professor Shiri and Lei Shi, see more in the Research Work section*