Background: There has been a persistent decline in the number of diverse students entering computer science (CS) and technological majors for several decades.[1] This decline has resulted in lower rates of employment in STEM fields (especially technology fields) for diverse populations during a time when there is an excess of technology-related careers to go around in this country.[2] [3] There is plenty of evidence to suggest that diversity is a major contributor to innovation and a variety of backgrounds are crucial when developing new ideas.[4] [5] Therefore solving the problem of underrepresentation is pivotal in the coming years as new innovative technologies become necessary to combat society's ever-growing challenges.

Before diversity can spread within technological industries the reasons behind the decline must be explored and properly dealt with. The research I am pursuing is a unique avenue toward the goal of solving the underrepresentation problem in CS and other technological fields.

Research Idea: The research would constitute using virtual reality to influence the participant's sense of belonging in the field of CS. If this research suggests a strong correlation between belonging and having a family history or personal connection to technological fields than it may add evidence to the idea that underrepresented groups in CS remain that way because there is a history of discrimination in the field.[6] I intend to use virtual reality (VR) because it is more

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[1] Tracy Camp. 2012. 'Computing, we have a problem …'. 2012. ACM Inroads 3, 4. 34-40. DOI: https://doi.org/10.1145/2381083.2381097

[2] U.S. Department of Labor Bureau of Labor Statistics. 2018. Occupational Outlook Handbook, Computer and Information Technology Occupations. www.bls.gov

[3] Liana Christin Landivar. 2013. Disparities in STEM employment by sex, race, and Hispanic origin. 2013. Education Review 29, 6. 911–922.

[4] David Rock and Heidi Grant. Why diverse teams are smarter. 2016. Harvard Business Review 4, 4. 2–5.

[5] Inga J Hoever, Daan Van Knippenberg, Wendy P Van Ginkel, and Harry G Barkema. Fostering team creativity: perspective taking as key to unlocking diversity's potential. 2012. Journal of applied psychology 97, 5. 982.

[6] Carter D.F., Razo Dueñas J.E., Mendoza R. Critical Examination of the Role of STEM in Propagating and Maintaining Race and Gender Disparities. 2019. Higher Education: Handbook of Theory and Research. Higher Education: Handbook of Theory and Research, vol 34.

immersive than watching a video or playing a video game on a 2D screen.[7] VR is better than a real-world environment for internal validity in experimentation because it is a controlled environment.[7] VR also allows the researcher to manipulate things that they may not be able to in a real-world experiment such as the gender of the participant's avatar (their disembodied virtual representation).

Research Questions: (1) Does a familial background or personal connection with CS and the technology community (a sense of belonging) influence a student's decision to take CS courses? (2) Can a virtual environment temporarily influence a person's sense of belonging in CS enough to alter their decision to take a CS course?

Hypotheses: (1) Participants without an initial sense of belonging (henceforth, Pw/oB) primed with audio cues in a virtual environment meant to encourage a sense of belonging (positive cues) will be significantly more likely to enroll in a hypothetical CS course than Pw/oB who are primed with audio cues in a virtual environment meant to discourage a sense of belonging (negative cues).

(2) Participants with an initial sense of belonging (PwB) primed with positive cues will be significantly more likely to enroll in a hypothetical CS course than Pw/oB who are primed with positive cues.

(3) PwB primed with positive cues will be significantly more likely to enroll in a hypothetical CS course than PwB who are primed with negative cues.

(4) PwB primed with negative cues are more likely to enroll in a hypothetical CS course than Pw/oB primed with negative cues.

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[7] Jérôme Dinet and Munéo Kitajima. Immersive Interfaces for Engagement and Learning: Cognitive Implications. 2018. In Proceedings of the Virtual Reality International Conference - Laval Virtual (VRIC '18). 14. 8. DOI: https://doi.org/10.1145/3234253.3234301