SP24.16: Removing Algorithmic Bias from SpokeIt, a Cleft Speech Therapy Game

Overview
This SHERC-funded PPP project will address the needs of people who receive, give, or are affected by speech therapy. Research has shown that people with speech impairments often have lower income, delayed independence, symptoms of depression, and lower social skills. Speech is a skill that often improves with speech therapy, but up to 70% of speech-language pathologists in the US have waiting lists, indicating a workforce shortage. SpokeIt is the first and only speech therapy game capable of diagnosing speech errors in children born with an orofacial cleft, including articulation, compensatory, and resonance errors. Our objectives are to 1) test whether SpokeIt can accurately diagnose cleft speech errors without biases against Hispanic and Indigenous populations' accents in the Southwest US and 2) to gather preliminary data for an R01 application to examine the longitudinal efficacy of SpokeIt. Our long-term goal is to provide clinically accurate and effective telehealth interventions for cleft speech therapy to underserved populations with limited resources. Our central hypothesis is that the underlying machine learning models and speech recognition systems in SpokeIt have a higher incidence of false positives when diagnosing common cleft speech errors for people with an accent. The rationale is that this work will increase confidence that biases are removed from SpokeIt's diagnostics before proposing an R01 large-scale longitudinal efficacy study.

What the student will DO and LEARN
Students will help clean and organize telemetry data collected from the game for statistical analysis. group discussion.

Additional benefits
Students will get hands-on experience contributing to the research of a real-world product that can address health disparities.

Additional qualifications
Students will be mentored for all aspects.

Time commitment
6 hrs/week for 15 weeks