

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING  
COLLEGE OF ENGINEERING & APPLIED SCIENCE

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE students

FOR APPLICATION YEAR: 2024

**PROJECT TITLE:** Development and evaluation of a web-based app for transgender voice coaching

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### Project Description

Area of research: Transgender people frequently experience voice-gender dysphoria: distress that their voice does not match their gender identity (e.g., trans women with deep voices). One way to address this dysphoria is through intensive voice coaching provided by professionals, but such coaching is often expensive (\$100 or more per hour) or unavailable. Thus, our research group has been developing a free web-based app that guides transgender women through structured exercises for modifying their vocal pitch and resonance. As of December 2023, a limited prototype is about to be launched on a UC web server and usability tests are scheduled to begin in early 2024. However, many features remain to be developed and tested.

Research tasks to be performed: The UPRISE student will primarily focus on developing new features for the web-based voice coaching software, which has been developed in the React framework primarily for desktops/laptops. Potential features include, for example, exercises for different aspects of voice, databases for long-term performance monitoring, extension to mobile devices, and gamification aspects. Specific features to be developed will be selected based on project priorities and the student's own interests. As a secondary task, the student may be invited to test the software with potential end-users and gather feedback.

Training that will be provided: The project team will train the student in best practices of web-based software development, the fundamentals of acoustic signal processing, design of serious games, and conducting experiments with human participants.

Requirements for student: At least minimal experience in web development required. Experience with JavaScript (and optionally React framework) preferred.