

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

RESEARCH OPPORTUNITIES FOR UNDERGRADUATE students

APPLICATION DEADLINE: April 29, 2024

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

Physical Requirement : No physical requirements

Project's Technical Skills Requirement : At least minimal experience in web development required. Experience with JavaScript (and optionally React framework) preferred.

Project's Available Positions : 1-2

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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 April 2024, a limited prototype has been launched on a UC web server and usability tests have begun. However, many features remain to be developed and tested.

Tasks to be performed: The 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.