



Code: Woodruff_A

APD 1210 RESEARCH PRACTICUM COURSE

PROJECT DESCRIPTIONS 2025-26

FALL/WINTER

Name and Title: Dr. Earl Woodruff (under the supervision of Teresa Orbillo-Villaruz, 3rd year PhD Student)

Lab Website: <https://www.oise.utoronto.ca/elo>

TITLE OF RESEARCH PROJECT: *Speech Emotion Recognition (SER) for Deeper Learning*

NUMBER OF STUDENT PLACES AVAILABLE: 2

PRIMARY MODE OF RESEARCH PLACEMENT PARTICIPATION (circle one option and describe):

☐ IN PERSON

☐ REMOTE (ONLINE)

☒ HYBRID/FLEXIBLE

Please describe: Most meetings and all trials will be held online, some meetings and/or data analysis will occur at the ELO lab at OISE.

OBJECTIVES AND METHODOLOGY: Speech analyses have primarily been used in research surrounding psychological assessment of psychosocial health for mood disorders. Previous research reports that stress and voice types are related to changes in the autonomic nervous system, particularly in muscle tensions (the tightening of vocal cords) resulting in changes in speech patterns. However, previous research has not inspected speech analysis for students experiencing emotions in academic settings. Academic emotions are emotions experienced specifically in academic settings, that effect students' understanding by influencing cognition during learning. The study aims to: (1) accumulate a database of vocal properties (pitch, tone, energy) from undergraduate students' speech during a cognitive task (answering riddles), (2) cross- reference speech data with facial expressions (using AUs) and self-reports to infer academic emotions, and (3) create a machine learning model to detect academic emotions in students.

DESCRIPTION OF STUDENT PARTICIPATION:

Student responsibilities/skills taught:

- Literature reviews
- Data analyses and cleaning of speech and AU (facial) patterns (will be taught)
- Rating emotion data based on criteria (will be taught)



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- Possibility of conducting participant trials (will be taught)
- Time commitment 8-10 hours/per week

DESCRIPTION OF PREFERRED SKILLS/BACKGROUND (OPTIONAL):

- Comfortable using Microsoft Office, particularly Excel.
- Knowledge and skill using Python/coding an asset but not necessary.

DAY AND TIMES OF LAB MEETINGS:

- Weekly ELO lab-wide meetings - Thursday mornings (10-11/11:30am)
- Bi-weekly SER meetings – TBD based on everyone's availability