



Code: Woodruff\_B

**APD 1210 RESEARCH PRACTICUM COURSE**

**PROJECT DESCRIPTIONS 2025-26**

**FALL/WINTER**

**Name and Title:** Dr. Earl Woodruff (under the student supervision of Qiyuan Zheng, PhD Candidate)

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

**TITLE OF RESEARCH PROJECT:** *Decoding Interest, Emotion, and Behavior in Learner Engagement Using AI Methods*

**NUMBER OF STUDENT PLACES AVAILABLE:** 1-2

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

☐ IN PERSON

☐ REMOTE (ONLINE)

☒ HYBRID/FLEXIBLE

*Please describe: Project meetings will be held mostly online, but remain some in-person requirements for the data collection and analysis.*

**OBJECTIVES AND METHODOLOGY:** *This study investigates how students' physiological and behavioral responses (e.g., facial expressions, EDA, and gaze behaviors) can be used to identify real-time levels of interest and boredom during interactive on- screen interactive learning tasks. This study will employ machine learning models to assess the accuracy of detecting these emotional states based on physiological data. Learners' engagement levels will then be esitamated by AI methods. Ultimately , this research aims to support the development of affect-aware AI-tutor that dynamically adapt to maintain and enhance student learning interest and engagement.*

**DESCRIPTION OF STUDENT PARTICIPATION:**

- *Assisting with literature reviews;*
- *Participating in coding and rating the video data (will be taught);*
- *Annotating behaviorl/physiological data and helping to preprocess physiological signals (will be taught);*
- *Supporting the building and testing of machine learning models via R/Python (will be taught);*
- *Attending bi-weekly project meetings and weekly Elo Lab meetings*
- *Students are expected to commit approximately 8–10 hours per week from September to April.*



**UNIVERSITY OF TORONTO**  
**OISE | ONTARIO INSTITUTE**  
**FOR STUDIES IN EDUCATION**

**DESCRIPTION OF PREFERRED SKILLS/BACKGROUND (OPTIONAL):**

- *Interest in educational psychology, emotion research, or human–AI interaction;*
- *Basic experience with data analysis and coding in Excel, SPSS, Mplus, R, or Python (any 1 or 2 of them);*
- *Strong willingness to learn new tools or skills (e.g., facial coding software, physiological data processing);*
- *Professionalism when working with human participants, including strong communication and organizational skills*

**DAY AND TIMES OF LAB MEETINGS:** *Regular lab meeting for Elo Lab will be held every Thursday morning from 10:00 to 11:30am (Hybrid); Project meeting will be held bi-weekly or as demand.*