

Multimodal Learning Analytics for video-based learning

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Place: LCI Lab: <https://lci.idi.ntnu.no/>

Suitable for: One or Two students

Introduction

The focus of the thesis is to develop a deeper understanding of students in video-based learning settings (e.g., edX, Coursera) to improve the learner models using the physiological data (e.g., EEG, eye-tracking, clickstream, emotions, heart rate, temperature).

Thesis Description

In a first step, the student needs to review the literature and familiarize himself/herself with the use of physiological data within the video-based learning. Then, the candidate will design interface and plan the physiological measurements, based on the best practices found and adapted from the literature. Afterwards, the candidate will conduct a user study to predict students' performance using the multimodal data. Finally, the candidate will analyse the collected data and write up his/her thesis.

Requirements

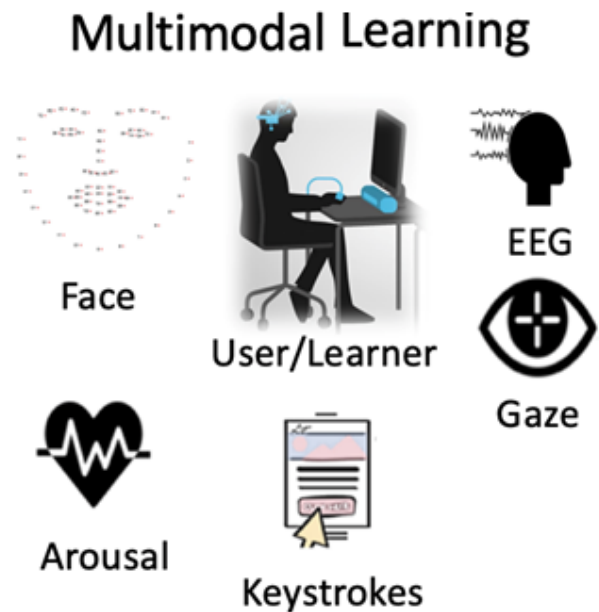
The ideal candidate will have a background in data science. Skills related to small interaction-development (React) and an interest in data analysis (e.g., time-series analysis) and experimentation is also a requirement.

Programming skills: Python, React, MongoDB.

Other skills (optional): time-series analysis, basic machine learning

Expected Project Work Packages

1. **WP:** Literature study on insights about video-based learning using physiological data.
2. **WP:** Setting up the working environment (video-player) and understanding the basics of data collection.
3. **WP:** Implement interfaces to capture learners' experience and performance.
4. **WP:** Conduct user studies, collect empirical data and analyze them.
5. **WP:** Write-up the thesis.



Thesis grading scheme

Grade	Description of the evaluation criteria
A	The candidate demonstrates excellent judgement and a high degree of independent thinking. Significantly exceeded expectations with original contribution.
B	The candidate demonstrates sound judgement and a very good degree of independent thinking. A very good performance, the candidate has exceeded expectations.
C	A good performance in most areas. The candidate demonstrates a reasonable degree of judgement and independent thinking in the most important areas, the expectations are met but not surpassed.
D	A satisfactory performance, but with significant shortcomings. The candidate demonstrates a limited degree of judgement and independent thinking.
E	A performance that meets the minimum criteria, but no more. The candidate demonstrates a very limited degree of judgement and independent thinking.
F	A performance that does not meet the minimum academic criteria. The candidate demonstrates an absence of both judgement and independent thinking.