Independent Study Proposal

Title: Teacher Survey Pairing System

Project Overview

Background

Teachers play an enormous role in student learning. One of the greatest contributions teachers made is that they facilitate collaborative learning in the classroom. For instance, teachers help form study groups and provide guidance to students during the collaboration. Unfortunately, a teacher's attention and availability is limited and cannot always satisfy students' demand. It is too challenging for teachers to quickly come up with beneficial study groups while taking care of a large number of students. Previous study revealed that teachers may desire hybrid control between students, teachers and AI systems, when orchestrating classroom activities in collaborative learning.

My interest or field of study

Researchers found potential in AI-based educational systems to assist teachers enhance their effectiveness in class. However, it is currently unclear how specifically teachers want to work with the system in the classroom. I am most curious about how teachers co-orchestrate the dynamic pairing process with the AI-based system. Three main research questions I want to understand through the independent study opportunity are listed below:

1. Who should suggest the student pairs?
2. Who should evaluate the proposed student pairs?
3. Who should make the final decision about the student pairs?

Learning Objectives

Goal: Practice User-centered Research & Design Approaches
- Get familiar with systematic means and frameworks to analyze qualitative data in order to derive insights about participants’ behaviors, motivations and unmet needs.
  - Plan and implement data gathering approaches, such as holding interviews, with real users.
  - Conduct inductive or deductive data coding processes, such as making affinity diagrams.
  - Synthesize research findings and envisions new system features that fulfill users' (teachers’) needs.
  - Communicate ideas and insights with mentors, professors, and stakeholders through informal weekly reports and formal presentations.

- Make Usable Design
  - Hold co-design workshop with stakeholders (teachers) to collect insights
  - Prototype and iterate user interface of the AI-assisted Pairing system

- Gain insights in Human-AI interaction
  - Conduct literature review
  - Study how teachers understand AI-based educational systems

**Deliverables & Schedule**

- **Stage 1: User Research (2-3 weeks)**
  - Finish Qualitative analysis and synthesis

- **Stage 2: Prototype/Envision pairing system UI (2-3 weeks)**
  - Make Mid-fi Prototype with alternative designs
  - Internal testing with in group

- **Stage 3: Test prototype with users (2-3 weeks)**
  - Conduct usability test and evaluate features
  - Participate in co-design workshops

- **Stage 4: Synthesize insight from user testing (2 weeks)**

- **Reading list:**
  - Text Books:
    - *Interviewing Users: How to Uncover Compelling Insights* By Steve Portigal
  - Papers:
Exploring Human–AI Control Over Dynamic Transitions Between Individual and Collaborative Learning

https://link.springer.com/chapter/10.1007/978-3-030-57717-9_17

Time Commitment/Credit Rationale

- This independent study will count for 6 units. My general weekly schedule will be as follows:
  - 0.5 hour of group research meeting
  - 0.5 - 1 hour of meeting with research mentor
  - 2 - 3 hour of data analysis or ideation/brainstorming/prototyping
  - 1 - 2 hour of literature review and textbook reading