

Research Assistant Opportunity Casual Position

Student's engagement detection and pedagogical intervention design in online learning

Start Date: February 10, 2023

Overview of the project:

Online learning has become an important means of delivering distance education. This learning context presents unique challenges, however, leading to a growing demand for real-time engagement detection and pedagogical interventions designed specifically for an online learning environment. Unfortunately, the theories and principles of technology-enabled learning do not yet provide clarity on best practices in developing such functionalities. To our knowledge, no technological system is currently available that can fully sense natural human engagement signals and respond accordingly. We expect our engagement assessment system combined with pedagogical agents embedded within the online learning environment will fill this gap. We seek to design, implement, and evaluate a system that uses emotion sensing to guide pedagogical responses that will (a) enhance engagement by redirecting the attention of students to their learning activities, and (b) provide students with realistic and effective learning experiences in online courses. We will implement the system in an online learning environment (e.g., Moodle), where we will perform empirical studies and develop prototype applications to test and explore theoretical concepts. We are most interested in these questions: In what ways and to what extent can online learners' learning behaviours be properly recorded and recognized? What can these behaviours reveal about the engagement level of individual learners? How can we best respond to learner engagement cues using a pedagogical agent to control the intervention?

Specific activities include, but are not limited to:

- Designing and developing system to apply in distance education
- Reviewing research articles, and implementing and analyzing systems for performance evaluation



- Writing report and research articles
- Doing project presentations in the progress meeting

Qualifications:

- Must be an active student (MSc or BSc) at Athabasca University or in any Canadian University during the period of hiring.
- Must be eligible to work at Athabasca University (e.g., Canadian citizen, permanent resident, appropriate working permit, or full-time student with valid study permit).
- Must be able to devote 10 to 12 hours on the project tasks, according to the pre-approved reasonable task-hour plan every week.
- Must be able to attend weekly progress meetings online.

Skill Requirements:

- Programming experiences and skills in Matlab or Python
- Programming experiences and skills in HTML-5, JavaScript, PHP, MySQL
- Software development skills, especially for web-based programming
- Experience and ability to design and build tools or systems
- Experience in designing user interfaces and data visualization
- Student must have knowledge in image processing, computer vision, machine learning, and pattern classification.
- Experience in information collection, re-organization, summarization, and preparing reports.
- Good communication skills.
- Ability to work independently with minimum supervision.

How to apply:

Qualified individuals are encouraged to submit their application by email to Dr. Ali Dewan (adewan@athabascau.ca). Applications should include (as a single PDF file) a brief cover letter that summarizes your skills, interests and experience, a current resume or curriculum vitae, and contact information for at least three referees. Evaluation of applications will begin immediately and will continue until a suitable candidate is found.

