Research Office
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Athabasca, AB T9S 3A3

Research Assistant Opportunity
Casual Position
Automatically Creating Meaningful, Engaging, and Pedagogically Sound Educational Questions Using Language Models

Position start date: April-May 2026

Overview: Questions have been long used by instructors, dating back to Socrates, to promote learning through encouraging discussion, stimulating curiosity, and guiding problem solving. Asking effective questions has been called one of the most effective single educational acts that an instructor can undertake due to its power to impact students' learning. While answering questions has clear benefits for learners, creating meaningful, engaging, and pedagogically sound questions is a significant amount of work for teachers and as such, the power of asking questions is often not used or only used in a limited form in educational settings.

Language models (LMs) are a novel emerging technology capable of generating different media, including text, from a descriptive prompt. Some research has been done on using LMs to generate educational questions, however, the resulting questions have several issues such as: 1) insufficient quality to be directly usable 2) limited alignment with pedagogical frameworks, 3) unengaging, and 3) not aligned with courses' learning objectives.

This project aims to utilizes LMs to generate high-quality, engaging, and pedagogically sound questions. More concretely, in this project, we aim to use advanced LM techniques to improve the automatic question generation process with respect to the following research questions:
How to ensure that generated questions are relevant to the learning material?
How to ensure that generated questions are aligned with the desired cognitive level?
How to ensure that generated questions are engaging?
How to ensure that generated questions support the course's learning objectives?

These research questions will be answered by investigating advanced LM techniques such as self-correcting architecture and retrieval augmented generation (RAG) both of which have been successfully utilized for other knowledge-based tasks. The second and third questions will be answered by incorporating additional metadata into the training data by labelling examples using Bloom's and ICAP frameworks.

Specific activities include, but are not limited to:

1. Design and development of self-correcting architecture and RAG for a language model using Python code
2. Development and execution of test cases.
3. Data analysis of the results from test cases and the execution of the language model.
4. Writing scientific papers about the conducted research.

Qualifications:

1. Being enrolled in AU's MSc CIS program
2. Strong background in computing and information systems (i.e., a BSc degree in computer science or a related field)
3. Excellent knowledge of language models techniques an asset.
4. Strong Python programming skills.
5. Prior research experience is an asset.
6. Strong logical reasoning and analytical skills preferred.

Amount of hours: 180 hours (with possibility of extension)
Anticipated average hours per week: Spending between 15-35 hours per week for working on this project (this project can be done as half-time project with about 15-20 hours per week or full-time project with 35 hours per week)
Location: The position can be done virtually from anywhere in Canada.

This is a funded position and the successful candidate will be offered to co-author research papers. The research assistant will receive training and guidance on conducting the research activities.

We are looking particularly for people who would like to join the research team for a longer period of time. This position also prepares you well for later conducting your MSc essay, project or thesis or undergraduate research project.

How to apply:

Please send your application to cbernard@athabascau.ca and sabineg@athababasca.ca.
Applications should include (as a single PDF file):

- a brief cover letter highlighting how your skill set aligns with the qualifications, interests and experience;
- a current resume or curriculum vitae;
- an unofficial copy of your transcript;

Please submit your complete application latest by **April 6, 2026**, which is the date when we will start to evaluate applications. The call will be kept open until a successful candidate is found.

All applicants are thanked for their interest in this position; however, only candidates selected for an interview will be contacted.

Athabasca University and the researchers are committed and seek to support equity in employment and research opportunities. We strongly encourage applications from Indigenous people, people of colour, people with disabilities, 2SLGBTQ+ people, women, and other historically marginalized groups. Applicants are welcome, but not required, to self-identify in their letter of application.

For more information on this Research Assistant Opportunity, please contact cbernard@athabascau.ca and sabineg@athabascau.ca.