November 16, 2018

RE: Mitacs Accelerate Proposal

Project Title:	**Natural Language Generation for Intelligent Tutoring Systems**
Internship Supervisor(s):	**Sylvie Ratté**
Intern(s):	**Dung Do Vu**
Department:	**Département de génie logiciel et des technologies de l'information**
Institution:	**École de technologie supérieure**
Partner Organization:	**AI-Educate**

Dear applicants,

Your application to Mitacs Accelerate has successfully passed research review. Your **research project** has been approved for a total grant of $80,000.00 that will be delivered through **eligible internships**. Your internship should not start prior to confirmation of eligibility as outlined below:

1. Mitacs must receive partner funds before each internship start date to pay the intern(s) on time;
2. Project leads must confirm intern name(s) and start date(s). No costs for an internship can be incurred prior to the research project approval and the receipt of partner funds for the internship;
3. To identify a new intern, the Intern Profile form (including CV and memorandum) must be submitted to Mitacs before the applicable internship's start date and obtain Mitacs approval.

All awards are subject to ongoing program eligibility, continuation of funding by the partner organization(s), and continuation of funding by our government partners. Mitacs-Accelerate gratefully acknowledges the financial support of the Government of Canada and the Government of Québec through the Ministère de l'Économie, de la Science et de l'Innovation (MESI).

Welcome to Mitacs Accelerate. With this program, interns can apply their specialized expertise while companies gain a competitive advantage. We look forward to the success of your project.

If you have any questions, please contact Ariane Kamdoum, Grant Management Specialist, at akamdoum@mitacs.ca.

Sincerely,

Ridha Ben Mrad
Chief Research Officer and Associate Academic Director

Enclosures:
- Appendix A: Referee comments
- Appendix B: Terms and Conditions of the Award
- Attachment: Intern Onboarding Information

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Appendix A: Referee Comments

Your proposal has undergone external review. We received three review reports and the comments are in general very positive. The reviewers are supportive of your research rationale, objectives and methodological approach. The comments are provided below for your information. We encourage you to consider the comments and suggestions from Reviewer 1 about the proposed methodology (see question #4) and from Reviewer 1 and Reviewer 2 about related work (see question #6) that may be helpful for your research project.
We wish the applicants success in their research.

Reviewer 1

1) Mitacs Accelerate supports research-based internships. Does the proposed project qualify as research in its discipline?
This project does qualify as a research. Automatically generating the questions and answers from unstructured text using neural approaches seems to be an interesting topic and there are interesting research questions on this topic. While there has been a recent surge in research on conversational AI how to utilize it in a tutoring system seems to be under-explored. Therefore the topic seems promising for a research project

2) Is the project appropriate for the academic degree level of the intern?
Yes, the project is suitable for a PhD student given that the student acquires adequate knowledge in AI, machine learning and natural language processing.

3) Are the objectives clear?
Objectives are reasonably clear.

4) Is the methodology appropriate to achieve the objectives?
The methodology seems appropriate for the most parts. I would like to leave with a few comments though:

- sub-obj 1: it was not clear to me how the encoder-decoder framework would interact with other components (e.g., definition extraction and hint discriminator). Maybe the researchers could put further thoughts on this aspect.

- sub-obj 2: The last sentence on page 10 was not justified. Why the researchers think that the generated QA pairs will be of high quality.

- for evaluation, the researchers may consider user studies with real teachers/students to see the potential utility of their systems.

5) Is the timeline realistic?
Overall, the timeline seems realistic.

6) Other comments and suggestions for the applicants. For example, is there prior work that should be considered by the researchers?
There are some recent datasets and research work that the authors should probably consider:
- Dataset on text QA (e.g. SQuAD from Stanford, NEWSQA from Maluuba)

- Neural models that attempt to generate questions (e.g. Question Generation for Question Answering by Duan et al. EMNLP 2017)

- plenty of works on conversational AI which might be helpful to be aware of (a good starting point could be "Neural Approaches to Conversational AI" https://arxiv.org/pdf/1809.08267.pdf)

Reviewer 2

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1) Mitacs Accelerate supports research-based internships. Does the proposed project qualify as research in its discipline?
The proposal deals with the intelligent tutoring systems. It involves a PhD student for 6 internships.

2) Is the project appropriate for the academic degree level of the intern?
The proposed project is appropriate for a PhD degree based research.

3) Are the objectives clear?
The objectives are well stated and constitutes a sequence of interesting challenges.

4) Is the methodology appropriate to achieve the objectives?
The methodologies are appropriates to achieve the objectives.

5) Is the timeline realistic?
The timeline looks realistic.

6) Other comments and suggestions for the applicants. For example, is there prior work that should be considered by the researchers?
I suggest that the student looks to the work in question generation and question answering.

Reviewer 3

1) Mitacs Accelerate supports research-based internships. Does the proposed project qualify as research in its discipline?
Yes.

2) Is the project appropriate for the academic degree level of the intern?
Yes.

3) Are the objectives clear?
Yes.

4) Is the methodology appropriate to achieve the objectives?
Yes.

5) Is the timeline realistic?
Yes.

6) Other comments and suggestions for the applicants. For example, is there prior work that should be considered by the researchers?
The proposal seems promising and well planned. NLG systems are one the important factors in ITS and highly needed.

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Please read all conditions carefully. Any questions or requests for clarification should be directed to your Grant Management Specialist listed in the letter above.

1.General guidelines:

1.1.The average amount of partner interaction for each four-month internship across the project should be 50% (or minimum of 25% with sufficient justification in original application).

1.2.Interns may complete up to 2 internship segments (4-6 months each) during a Master's degree, and up to 6 during a PhD and Post-doctoral Fellows may complete a maximum of 6 internship segments.

1.3.The start date of each internship cannot predate the research approval of the project and the receipt of partner funds for the internship.

1.4.Awarded funds must be allocated according to the internship period(s) and stipend/salary allocations, which will be outlined on the Mitacs Award Letter.

1.5.Please report any substantial change (internship dates, project personnel, partner organizations, etc.) concerning your project immediately to your Mitacs Grant Management Specialist contact.

2.Funding:

2.1.Contribution funds from the partner organization must be paid to Mitacs prior to the internship start date to facilitate efficient payment process for interns.

2.2.Funding will not be released for un-named interns.

2.3.The stipend portion of the award must be spent as outlined in the award letter. No extensions can be granted on stipend amounts.

2.4.The research grant portion of the award must be spent by end date of the award. Any remaining research funds may be used by the academic supervisor to supplement the intern's stipend at the Academic Supervisor's discretion. Any funds not spent by this date must be returned to Mitacs unless an extension of the award is granted by Mitacs. To obtain an extension, the supervisor needs to contact Mitacs before the end date of the award, with justification of such a request.

2.5.In-kind contributions cannot be used towards matching Mitacs funds.

2.6.Inter-university transfers are not permitted.

2.7.To ensure that your project complies with the Mitacs university agreement and federal granting council policies, you must provide Mitacs with copies of all contracts that govern the research being performed using Mitacs funds.

3.Intern Stipends:

3.1.Each intern **must** receive a minimum $10,000 stipend/salary for each internship unit.

3.2.All stipend/salary funds must be paid over a period of <u>no less than 4 months and no greater than 6 months</u> per internship unit.

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4.Research Funds:

4.1.The remaining funding may be used to cover expenses in support of the internship research and its related costs, as directed by Tri-Council. A detailed description of eligible expenses is available on the NSERC website at the following link: http://www.nserc-crsng.gc.ca/Professors-Professeurs/FinancialAdminGuide-GuideAdminFinancier/FundsUse-UtilisationSubventions_eng.asp

4.2.Relevant research expenses incurred outside of the indicated funding period may be approved by Mitacs on a case-by-case basis.

5.Reporting:

5.1.If the award straddles fiscal years, the University will provide a separate Form 300 (statement of account) for each account by **May 31st** for each fiscal year until the account reaches a zero balance. The University will provide a Final Form 300 for each account **within 30 days of the end date of this award.** The Academic Supervisor and Finance Officer must sign the Form 300s and forward to Mitacs once finalized. **Please include the Application Reference number and Project Title on the Form 300 and submit to** form300@mitacs.ca

5.2.Projects involving more than 50 internship units and spanning longer than 2 years are required to submit a progress report to Mitacs at the mid-point of the project. Please designate one academic supervisor to be the coordinator who is responsible for submitting the report to Mitacs. Failure to submit a satisfactory report may result in delay or cancellation of subsequent funding.

5.3.All parties are required to provide Mitacs with a final report and completed exit surveys at the end of the Mitacs Accelerate internship. Please find the links below:
Accelerate Final Report:
http://www.mitacs.ca/sites/default/files/uploads/page/mitacs_accelerate_final_report_mar2013.zip
Accelerate Intern Exit Survey:
http://sondages.outsidesoft.com/Engine/Default.aspx?surveyID=9eff01b6-316a-49c9-b257-83afff51e497&lang=EN
Accelerate Professor Exit Survey:
http://sondages.outsidesoft.com/Engine/Default.aspx?surveyID=023afce3-c581-4c97-9294-6e8f5e25b1ef&lang=EN
Accelerate Partner Exit Survey:
http://sondages.outsidesoft.com/Engine/Default.aspx?surveyID=f413d47d-b4f3-49a4-be2c-5e0a947bcafb&lang=EN

6.Acknowledgement of Mitacs:

6.1.All Mitacs-sponsored results must explicitly credit Mitacs. This includes work by professors, post-docs, interns, and research associates. Mitacs funding can be acknowledged in publications using the following statement: ''This work was supported by Mitacs through the Mitacs Accelerate Program.'' All networking activities initiated by your project for which Mitacs funds are used must also credit Mitacs. For advertising purposes, the Mitacs logo is available in several formats for download from the website at www.mitacs.ca

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