**Advanced Innovation Center for Future Education**

**Beijing Normal University**

**Call for Research Proposals**

**Backgrounds and Aims**

One of the defining features of development today is the emergence and expansion of the cyber world, stimulated by the spectacular growth in internet connectivity and mobile penetration (UNESCO, 2015). As artificial intelligence (AI) is emerging from science fiction to everyday life, it continues to influence industries like consumer electronics, E-commerce, media, transportation, and healthcare. Education is inevitably to be the next big opportunity.

For centuries, education has mostly followed the old traditional structure. However, the fast advancement of AI may provide disruptive technologies to revolutionize how pupils learn, how teachers teach, and how society drives forward learning in the future. Given that education is the foundation which prepares people to pursue advancements in all the other fields, it has the potential to be the most influential filed by AI.

In 2013, UNESCO released a working paper stating that learning technologies with AI would become more widespread in education domain and increasingly available on various smart devices. Recently, the Chinese government also announced its intentions to prioritize the development of AI as part of its national development plan.

Supported by the Beijing municipal government, the Advanced Innovation Center of Future Education (AICFE) focuses on promoting the transition of Beijing educational public service from digitization to intelligence and supporting the establishment of a new model of educational service based on big data and AI. We established a global research program called “**Artificial Intelligence (AI) Tutor**”. It aims to provide an innovative platform for international research cooperation, understanding and investigating how AI could reinvent the future of education from both teaching and learning perspectives. The ultimate goal of this program is to build an “AI Tutor system” which could provide personalized education, allowing learners of differing abilities and at different stages of development to progress and excel at their own pace.

This program is inviting renowned experts worldwide in all the AI-related and education-related fields. It encourages all types of contributions including theoretical, engineering and applied work. Annual conferences would be held to discuss impactful research topics under the umbrella of the AI Tutor research as well as the challenges and opportunities in AI-driven educational technology.

**Grant and Supports**

Each grant provides up to US$50,000 for applicants who are currently working on or would like to start research projects that are aligned with the *AI Tutor* program. The grant is used to cover all the expenses for working in China and pay for the time and effort devoted to the project. Grant recipients will be required to participate in the *AI Tutor Seminars* and complete other program requirements*.*

Grant recipients will have the opportunity to access the student data collected from more than 600 middle schools (covering all districts in Beijing city) as well as the knowledge data from the Chinese educational system and domain. AICFE will assign at least one researcher to collaborate with the grant recipients. We may also provide research engineers/assistant to conduct the system implementation on the AICFE side.

**Scopes and Topics**

We welcome the original research contributions in the areas listed below, or on topics that may cross the boundaries among these areas, as well as other novel directions of interest under the umbrella of “AI Tutor” topic:

* AI-driven knowledge base construction, knowledge graph construction and ontology construction;
* AI-driven knowledge tracing, educational data mining and learning analytics;
* AI-driven learner emotion recognition and affective computing;
* AI-driven new generation of student model and adaptive learning system;
* AI-driven automatic question generation, automatic question answering and automatic short answer grading;
* AI-driven problem-solving ability assessment;
* AI-driven student academic performance and achievement prediction;
* AI-driven recommender system for student career development;
* AI-driven intelligent teaching robot and agent;
* AI-driven interactive teaching with natural language processing techniques
* Ethics and law for AI-driven teaching and learning;
* Large scale educational data storage, processing and transformation;
* Any other relevant AI techniques applicable to the education domain.

**Application Process**

**Adjudication Process:** Proposals *(see Attachment 1)* will be reviewed by the AICFE and multiple external reviewers. Grant recipients will be notified, which normally takes 4 weeks from the date we receive the application.

**Additional Material:** CV of the primary researcher, CV of all group members

**Important Dates**

|  |  |
| --- | --- |
| * Proposal submission deadline: | July 30, 2017 (1st stage)  **Extended to August 20, 2017**  November 30, 2017 (2nd stage) |
| * *AI Tutor Annual Seminar (1)*: | 2018 (TBD) |
| * *AI Tutor Annual Seminar (2):* | 2019 (TBD) |

**Evaluation Criteria**

One research proposal is required to submit, and it will be evaluated according to the following criteria (100 points in total):

* 25 points: Motivations and significance of the project, including the scope, timeline, qualifications of the applicant
* 10 points: Relevance to topics/themes about AI in education
* 25 points: Quality of the written proposal, i.e., clarity, structure, and design
* 20 points: Expected outcomes, e.g., paper, patent and system prototype
* 10 points: Feasibility of the technology
* 10 points: Multidisciplinary nature of the research

**Completion and Publication**

* All the grant recipients need to submit reports to AICFE during the project. The first progress report will be a comprehensive literature review of the proposed research area. Depending on the approved project proposal, other progress reports can describe the latest research findings, system design or experiment results.
* Grant recipients agree to share their preliminary analysis and progress at *AI Tutor Seminars.* Grant recipients will receive a complimentary registration for the conferences.
* Before the completion of the project, at least one journal paper (indexed by SCI or SSCI) and at least one top conference paper *(see Attachment 2)* should be published, under the name of AICFE and Beijing Normal University, China. Shall there be any researchers from AICFE participated in the approved project, their names and affiliations should also be listed. Patents and system prototypes are also strongly encouraged and will be considered as the key project evaluation criteria.
* All other outcomes related to the project should be published with the name of the Advanced Innovation Center for Future Education, Beijing Normal University. Shall there be any researchers from AICFE participated in the project, their names and affiliations should also be listed.

**Organizations**

* **Sponsors**

Advanced Innovation Center for Future Education of Beijing Normal University

Beijing Municipal Commission of Education

* **Organizer**

Advanced Innovation Center for Future Education of Beijing Normal University

**Contact Information**

Contact Person: Ms. Si (Sylvia) Gao or Dr. Yu Lu (Victor)

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**Attachment 1**

**Research Proposal**

(Revised May 2017)

(To be typewritten by the Applicant)

**Note:** The length of the grant proposal is expected between **1,000 and 1,500 words**, and it specifically addresses the following questions. Please note that the information given in this form will only be used for processing this application.

1. **Proposed Project Title**

*(Including the research questions.)*

1. **Applicant Information**

* *Name of Primary Researcher*
* *Level of Research Experience (choose one):*

1. *Early-Stage Researcher: I have conducted less than 3 formal research projects and shared the results in a peer-reviewed journal or conference).*
2. *Experienced Researcher: I have conducted 3 or more formal empirical research projects and have published the results in top conferences* ***(see******Attachment 2)*** *and journals (indexed by SCI/SSCI).*

* *School/Institution*
* *Designation*
* *Work Address*
* *Work Phone*
* *Work E-mail*
* *Voluntary Indication of Ethnicity*
* *Other Members of Your Research Team: Name(s) and Institution(s)*
* *Other Sources of Funding for the proposed project (list institution and amount)*

1. **Project Motivations**

*(What debates, experiences, concepts, readings, etc., influenced or motivated this project? How are these questions informed by the AI Tutor project?)*

**4. Scope of Research**

*(Please identify key issues/problems to be addressed.)*

1. **Research Methodology**

*(Please include the conceptual/theoretical framework, methodology, data collection, and analysis procedures.)*

1. **Statement of Significance**
2. **Timeline**

*(Please include the length of the project and detailed timeline.)*

1. **Statement of Ethics**

*(How you will account for the ethical demands that may arise during the project, including issues of consent, confidentiality, privacy, and reciprocity for participants?)*

1. **Details of Any External Collaboration:**
2. **Outcomes**

***(****e.g., paper, patent and system prototype.)*

1. **References**

*(An extensive reference list is not compulsory; please provide the literatures and references to properly demonstrate the key related work.)*

1. **Budget**

*(Applicants are required to include a budget list outlining each item and a rationale for each expenditure. The transportation and accommodation fees of grant recipients shall also be included.)*

1. **Declaration of the Applicant**

I wish to apply for a research project on the basis of the proposal given in this Form.

I undertake to abide by the general regulations of AICFE.

Signature Date

**[After completing all sections, please return this form to AICFE via the below contact e-mail address]**

**Contact Information**

Email: [aitutor@bnu.edu.cn](mailto:aitutor@bnu.edu.cn)

**Attachment 2**

**Conference List**

|  |  |  |  |
| --- | --- | --- | --- |
| **Abbreviation** | **Conference Name** | **Publisher** | **Website** |
| **SIGMOD** | ACM Conference on Management of Data | ACM | <https://sigmod.org/> |
| **SIGKDD** | ACM Knowledge Discovery and Data Mining | ACM | <http://www.kdd.org/> |
| **ICDE** | IEEE International Conference on Data Engineering | IEEE | <http://icde2017.sdsc.edu/> |
| **AAAI** | AAAI Conference on Artificial Intelligence | AAAI | <http://www.aaai.org/Conferences/AAAI/aaai.php> |
| **ICML** | International Conference on Machine Learning | ACM | <https://2017.icml.cc/> |
| **IJCAI** | International Joint Conference on Artificial Intelligence | Morgan Kaufmann | <http://www.ijcai.org/> |
| **NIPS** | Annual Conference on Neural Information Processing Systems | MIT Press | <https://nips.cc/> |
| **ACL** | Annual Meeting of the Association for Computational Linguistics | ACL | <https://www.aclweb.org/website/acl> |
| **WWW** | International World Wide Web Conferences | ACM | [http://www.iw3c2.org/](http://www.iw3c2.org/%20) |
| **CVPR** | IEEE Conference on Computer Vision and Pattern Recognition | IEEE | <http://dblp.uni-trier.de/db/conf/cvpr/> |
| **ICCV** | International Conference on Computer Vision | IEEE | <http://dblp.uni-trier.de/db/conf/iccv/> |
| **CHI** | ACM Conference on Human Factors in Computing Systems | ACM | <http://dblp.uni-trier.de/db/conf/chi> |
| **UbiComp** | ACM International Conference on Ubiquitous Computing | ACM | <http://dblp.uni-trier.de/db/conf/huc/> |
| **CHI** | ACM Conference on Human Factors in Computing Systems | ACM | <http://dblp.uni-trier.de/db/conf/chi> |
| **VR** | IEEE Virtual Reality | IEEE | <http://dblp.uni-trier.de/db/conf/vr/> |
| **ACM MM** | ACM International Conference on Multimedia | ACM | <http://dblp.uni-trier.de/db/conf/mm/> |
| **VLDB** | International Conference on  Very Large Data Bases | Morgan Kaufmann  /ACM | <http://dblp.uni-trier.de/db/conf/vldb/> |
| **SIGIR** | International Conference on Research on  Development in Information Retrieval | ACM | <http://dblp.uni-trier.de/db/conf/sigir/> |
| **MOBICOM** | ACM International Conference on Mobile Computing and Networking | ACM | <http://dblp.uni-trier.de/db/conf/mobicom/> |

\*Other conferences can be considered upon the approval from AICFE, BNU.