

PhD Student Position in Intelligent Tutoring and Assessment Systems in Education

We invite applications for a PhD student position at the Dalle Molle Institute for Artificial Intelligence (IDSIA) of the Università della Svizzera italiana (USI Lugano) in collaboration with the Swiss Federal Institute of Technology Lausanne (EPFL), the Department of Education and Learning of the University of Applied Sciences and Arts of Southern Switzerland (SUPSI-DFA) and the University of Teacher Education of St Gallen (PHSG).

The position is funded by the Swiss National Science Foundation (SNF) within the National Research Program on Digital Transformation (PNR 77).

The PhD student will be active in the project *Assessing the development of computational thinking skills through an intelligent tutoring system: an exploratory study in the cantons of St Gallen, Vaud and Ticino*, led by Prof. Dr. Francesco Mondada (EPFL), Prof Dr Luca Gambardella (USI-IDSIA), Dr Alberto Piatti (SUPSI-DFA) and Dr Dorit Assaf (PHSG). The project focuses on the assessment of computational thinking skills in the Swiss compulsory schools and aims at (i) defining an age-based competence model for computational thinking and identifying for each age category suitable prototypical problems requiring CT skills to be solved, (ii) developing a state of the art intelligent tutoring and assessment system supporting pupils in solving such problems while measuring their CT skills, thus enabling a semi-automatic large scale CT skills monitoring and (iii) validating the developed framework, collecting data about the effectiveness of the introduction of educational robotics into formal education at a primary and lower secondary level, with particular attention to the Swiss educational robot Thymio II. The methodology will be tested on several classes in St Gallen, Vaud and Ticino, three cantons that have a very specific program to address CT skills and that are introducing the Thymio II robot in primary and lower secondary school classes.

The successful candidate will be involved in the application of advanced techniques for improving the robustness and reliability of the mathematical competence model based on experts elicitation (e.g., by exploiting generalizations of probabilistic graphical modelling methods which allows for partial specifications of probabilities) and in the development of methods for the constant improvement of the model based on the data collected on field. He will also take part in the design and implementation of the intelligent tutoring and assessment system. These tasks, which will be carried out mostly inside IDSIA, will require collaboration with all partners.

For this position, we are looking for an outstanding Ph.D. student with excellent mathematical and programming skills, as well as good knowledge of English. The applicant should have a Bachelor and a Master degree in either Engineering, Computer science, Mathematics or similar fields.

The PhD student will be employed and matriculated at USI and will be part of IDSIA. The appointment will be for 4 years starting (ideally) October 1st 2020. The workplace will be located in Lugano at USI.

Deadline for the application: September 6th 2020, with possible extension.

Please send your CV with grades, motivation letters and names of three referee to:
Luca Maria Gambardella: luca.gambardella@usi.ch

Lugano, August 14, 2020