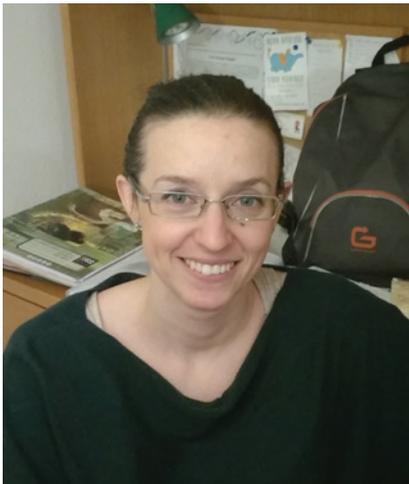


## SUPSI

# ASLAT – Adaptive Systems for foreign language teaching

*Axis 5 - Intelligent systems for knowledge and communications*

Interview with Francesca Mangili, project director



### Tell us briefly about the ASLAT project, starting with the problem tackled.

The ASLAT project originated from the desire to explore the opportunities offered by artificial intelligence applied to education. From this perspective, the aim of ASLAT was to revise the online language test given to new SUPSI students each year, making it adaptive, in the sense that the question selection process would be customised, adjusting to the competences of each student. This was achieved by converting the experience of the language teachers into a mathematical model of the knowledge, on the basis of which, in real time, an intelligent system analyses the answers given by students, reconstructs their competence profiles, and proposes the most appropriate subsequent questions. This adaptive approach allows the best students to be challenged by questions appropriate to their level, without discouraging beginners with questions

that are too difficult. Moreover, the assessment process becomes faster, thus reducing the work demanded to the students.

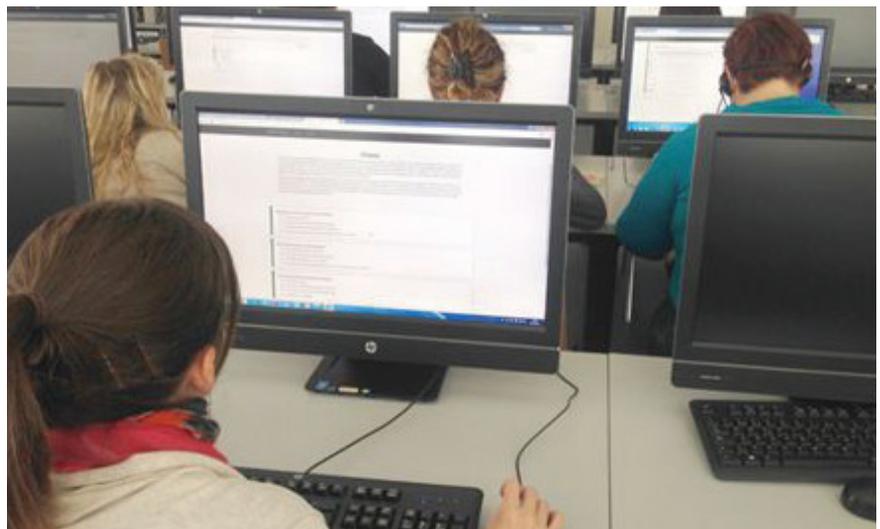
### What initial results have been obtained?

ASLAT, which ended in July 2016, allowed us to implement two tests based on two databases, each with 300 new questions (one for German and one for English). The questions were given to more than 400 students, and the responses were used to estimate the parameters of the model underlying the adaptive strategy. In the meantime, the simulations conducted in order to test the algorithms of the adaptive system confirmed that the total number of questions could be reduced, by 20% on average, without compromising the evaluation accuracy.

### What are the strong points of the project? And the problems?

The ASLAT test has the merit of explicitly formalising the relationship between competences and performance, adjusting the questions to the attributes of the examinees. This allows competences to be assessed in a way that is more detailed and effective, even when, as in this case, students have very differing levels of knowledge. The test also makes it possible to reduce the number of questions and improve examinee satisfaction levels.

The main problem encountered when developing this test, and in general when developing adaptive didactic tools, is that a big effort is required to teachers in order to create appropriate materials and formalise a knowledge model.



**Project type:** Internal project, SUPSI Research Fund

**Project partners:** IDSIA, CCL, CIRSE

**Do you remember anything interesting, amusing or unusual that occurred during the project?**

The number of questions posed in an ASLAT test is not fixed, but instead depends on the answers given (for example, students who always answer correctly can be evaluated after only a few questions). I was surprised to discover how difficult it was for students to accept the fact that they could not know the number of remaining question. It seems that many students feel uneasy when they cannot fully control the situation, as confirmed by the finding that students who performed the adaptive test demonstrated higher levels of anxiety.

**Could other projects develop from this one?**

First of all, we plan to promote the application of adaptive tests to other internal SUPSI courses. We will soon release a software that will allow all teachers to access the algorithms developed in ASLAT. Until this tool becomes available, anyone interested in creating an adaptive test is welcome to contact me or my IDSIA colleagues directly.

Moreover, on the basis of this experience, we are taking steps to initiate new collaboration agreements with institutes and companies interested in the e-learning sector, and in the development of intelligent systems applied to teaching.

**Apart from you, who else was on the project team?**

The project combined my own technological skills and those of my IDSIA colleagues, Alessandro Antonucci and Claudio Bonesana, with those of:

- Martin Saurer (teacher), Traudel Sattler (teacher), Jan Hardie (teacher), Germana D'Alessio (director) and Elisa Rubegni (expert in interface design) of the former Centre for languages (CCL) DEASS, now Centre for languages and studies on plurilinguism (CLIP) DFA;
- Loredana Addimando from the Centre for innovation and research on education systems (CIRSE), as regards the study of the psychological aspects associated with how the students perceived the test.

