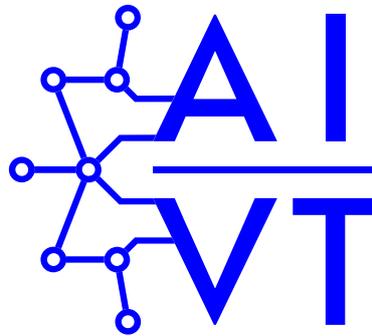


AI-VIRTUAL TRAINER



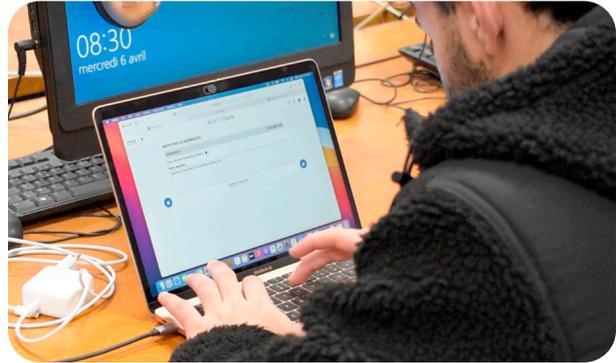
Artificial Intelligence - Virtual Trainer (AI-VT)

Artificial Intelligence Virtual Trainer (AI-VT) is an artificial intelligence-based learning support system that provides customized lists of exercise statements. The software has been developed to provide statements related to a discipline-specific skill. Of graduated difficulty, these lists of statements are personalised according to the learner's "level". The AI-VT system has already been applied to the learning of aikido, basic programming, and English.

1. Description of the AI-VT tool

The AI-VT system was developed using AI techniques. The objective is the modelization of a competence-based pedagogy supported by training sessions to permit the personalization of the learners' activities.

From this database, AI-VT automatically generates personalised and random lists of exercise statements for a learner to improve a targeted skill. Each learning session is characterized by a customized list of timed exercise statements to be resolved.



Two factors are central to the design of the system. Firstly, we advocate that the repetition of (identical or “similar”) exercises dealing with concrete examples, and belonging to the same family of skills, will lead a learner to acquire improved automatic reflex skills. The second factor is to personalise for each learner and for each training session, the list of exercises to be solved according to the learner's previous results, difficulties, and the time spent on solving the exercises, etc.

AI-VT is a generic system designed to be applied to different learning disciplines. AI-VT has already been applied to the learning of aikido, basic programming and English at the University of Franche-Comté, France. Research has demonstrated the system's efficiency and its interest among educational stakeholders.

2. Need to establish a diagnosis before AI-VT

AI-VT is based on a database of exercise statements in which each exercise statement corresponds to one or more sub-skills. During each work session with AI-VT, it is necessary for the learner to start by choosing a skill to work on. This choice depends on an initial diagnosis of which knowledge skills have been (partially or not) acquired in terms of the sub-skills. Until recently, this diagnosis has been done manually with small groups of learners and in consultation with the teacher. This upstream pre-assessment phase is not suitable, since it is partly subjective. Moreover, it should be an automated process to accommodate larger groups of learners.

For the afore-mentioned reasons, we propose the addition of software to automate this pre-diagnosis, which then makes it possible to provide a personalized working list of skills and sub-skills for each learner. Both a didactic and pedagogical tool for the teacher and the learner, the error status appears here as an indicator as it is used to structure the learning path. For each learner, we will thus create a profile which will serve as a reference for the use of AI-VT to choose, for example, the skills to work on at the beginning of each session. Over the course of the sessions, this profile will evolve according to the learner's progress and results.

3. Verbal interactions with Nao



The application of AI-VT to language learning involves offering learners exercises on verbal skills. We have integrated an interface with Nao the robot to the AI-VT system. While performing simple gestures, Nao currently asks students oral questions in English. Future objectives involve developing verbal interactions and exchanges between Nao and the learners.



A student learning English with Nao, the robot.

4. Contact

Marie-Laure Betbeder : marie-laure.betbeder@univ-fcomte.fr