START-UP

LANGUAGE LEARNING : A REALISTIC TALKING FACE

Dynalips is a start-up project supported by the *Incubateur Lorrain*. It develops a technology that can automatically coordinate the mouth movements of a 3D animated character with speech.

The proposed solution is multilingual and the quality of articulation is highly realistic. The project's target fields are e-learning especially for learning languages, 3D animation (films and TV series), video games and assistance for impaired-hearing people.

Loria

METAL provides a set of tools based on artificial intelligence to help with the digital transformation in schools. The academy (regional education authority) supports this project which provides individualized progress monitoring and personalized language learning for students while enhancing their written and oral levels in languages.

Florence ROBINE, rector of the Great East academic region, rector of the Nancy-Metz regional education authority, university chancellor

Similarly to health data, data linked to education needs to be protected. With the High Security Laboratory, the Loria has committed to using its international cybersecurity expertise to respond to this challenge.

Jean-Yves MARION, head of Loria

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RESEARCH ON E-LEARNING AT Loria

A FUNDAMENTAL RESEARCH

ARTIFICIAL INTELLIGENCE FOR SPEECH PROCESSING SERVICES

The Loria Multispeech team carries out research on automatic speech recognition and audiovisual speech synthesis (animation of talking heads) using artificial intelligence techniques, particularly deep learning.

Automatic speech recognition for non-native speakers is a current research issue. Animating a talking head, from text and audio, enables to illustrate the precisely defined articulation of sounds of speech in a given language.

In the context of language learning, talking heads enable learners to visualize the pronunciation of sounds while the aim of speech recognition is to give learners feedback on their pronunciation.

ARTIFICIAL INTELLIGENCE FOR PERSONALIZING LEARNING

The Kiwi team of Loria carries out research into artificial intelligence and applies it to e-learning from nursery schools to higher education.

It focuses on predictive and prescriptive modeling of individual behavior based on the automatic analysis of digital traces to provide personalized services for learners and teachers. It works on the ethical collection of learning data, the design of standardized repositories and innovative data mining algorithms and it co-designs dashboards with users.

The Kiwi team develops recommender systems that use the team's research about the link between sight and memory or the modeling of learner's cognitive load based on traces collected through smartwatches or eye-trackers.

ARTIFICIAL INTELLIGENCE FOR FRENCH LEARNING

In the INTERREG IV A Allegro (French as a foreign language) and E-FRAN METAL (French for French-speakers) projects, the Synalp team of Loria showed how text generation could be used to create grammar exercises adapted to the French language and how to use the information created to evaluate learner's progress automatically.

OUR PROJECTS APPLIED TO THE WORLD OF EDUCATION

METAL : INDIVIDUALIZED LEARNING TO MASTER LANGUAGES

The aim of the E-FRAN METAL project (Models and Traces at the service of Language Learning) is to improve written and spoken language learning in secondary schools. It also helps provide personalized learning plans for students along with individualized progress monitoring.

It involves all actors in the educational field (education authorities, school heads, teachers, students and parents, local or territorial funding authorities), publishers and researchers in the fields of artificial intelligence, automatic language processing, education science, law and psychology.

'metal'

LEARNING MORE EFFECTIVELY AT ALL AGES

› in nursery schools to strengthen literacy and numeracy skills (PIA E-FRAN Linumen),

› in 4.0 secondary schools with the analysis of the use of e-manuals (the academic PEACE project),

› in universities at undergraduate level (licence) with the use of Learning Analytics to help students succeed (PIA2 Dune Eole) or the recommender system for free educational resources (PIA2 e-education Pericles),

› with the CNED (National Centre for Distance Learning) by making Learning Analytics available to serve teachers,

› supporting governance bodies with training in the digital transition (Erasmus+ D-TRANSFORM).

IMPULSION AWARD

BacAnalytics, the winner of the 2018 Impulsion Award of the French Ministry of National Education and Youth, makes predictions of student choices related to the second group of exams of *baccalauréat*.

OUR PLATEFORMS

"MULTIMOD" TO STUDY SPOKEN COMMUNICATION

The Loria has a unique platform called "Multimod" at the international level for the acquisition of multimodal data such as acoustic speech, articulatory gestures of the mouth, facial expressions, movements of the head, arms and hands. These data are essential for a detailed study of the mechanisms of spoken communication.

This platform is composed of an articulograph allowing to follow the movements of the language in real time, 8 cameras of motion capture, a depth camera and a microphone. The platform helps to acquire, to synchronize, to merge and to analyze multimodal data.

LOLA, AN OPEN ENVIRONMENT IN LEARNING ANALYTICS

The aim of Learning Analytics is to make it possible to interpret the massive quantity of educational data available.

The goal of LOLA (Laboratory Open in Learning Analytics) is to provide an open environment for research, development and deployment of Learning Analytics, so that :

› researchers have real data corpus to learn, test and compare models,

› educational institutions access information on methodological, ethical and technical aspects,

› teachers share their uses of Learning Analytics in a real-life situation.

This open environment is supported by the Ministry of National Education and Youth.