Research Engineer Position
in Automatic Speech Recognition
for Computer-Assisted Language Learning (CALL) applications

Advisors: Isabelle Ferrané, Thomas Pellegrini and Julien Pinquier (IRIT, France), Lionel Fontan (Archean LABS, Montauban, France).

Context

ALAIA (AI-assisted language learning) is a **joint laboratory**, supported by the LabCom program of the French National Research Agency, between the SME **Archean Technologies** (Montauban, France) and **IRIT** (Toulouse Institute of Computer Science Research, UMR 5505 CNRS-INP-UT3-UT1-UT2J, Toulouse, France).

ALAIA joins the complementary skills of the academic and industrial partners for the development of **foreign-language learning applications**. For this purpose, ALAIA adopts a **multidisciplinary perspective combining foreign language pedagogy, linguistics, and data science**.

The first step of the ALAIA research program focuses on the automatic assessment of the **phonetic-phonological skills** of foreign-language learners. The main mission will be to contribute, in collaboration with the other people recruited on the project (post-doc, engineer, PhD students) to design, develop and integrate software components as services available on the web platform deployed by Archean Labs. These components will be based on speech recognition and machine learning methods.

Within this context, the ALAIA team is looking for a **research engineer in computer science**, ideally with high skills in these areas.

Job description

We are looking for a Full Stack Developer to design, modify, develop, write and implement software programming applications. These applications will be integrated on the platform developed by Archean and dedicated to second language learning.

The first short term mission will be to complete and release the component dedicated to automatic detection, localization and characterization of pronunciation errors, as provided by human experts (e.g., language teachers). To this end, the recruited person will rely first on existing tools available in the SAMoVA team, and then will propose some adaptations or new methods, to improve detection results. He or she will have to be operational with regard to the following tasks:

-   Acoustic modeling and adaptation (speaker, first language...)
-   Language modeling
-   Machine learning (detection and classification of mispronunciations, measures of speech intelligibility and comprehensibility)

The mid-term missions will involve the development and deployment of other web services based on phonetic and linguistic (lexical, syntactic, semantic) analysis.

Expected skills

- **Technical and scientific skills :** Familiar with signal/speech processing techniques and Machine learning methods (basic knowledge of "deep learning" would be a plus)
- **Complementary skills:** experience with ASR systems (e.g. Julius, Kaldi, HTK) - people with knowledge in NLP are also welcome to apply.
- **Programming skills :** Proven experience in programming languages (Python), engaged in web applications development and architecture design (like Node.js) - Experience with Frontend technologies (like React.js) - Familiar with database technologies (like MySQL, Postgres, MongoDB).

Working conditions

- **Location**: IRIT - 118, route de Narbonne 31062 TOULOUSE, with punctual meetings in Montauban (82000)
- **Duration**: 12 months, with possible extension
- **Salary**: according to background and experience
- **Application deadline**: the position is open until it is filled
- **Earliest starting date**: January 2021

Application form

Applications should be sent to isabelle.ferrane@irit.fr and lfontan@archean.tech including:

- a detailed CV
- one or two recommendation letters or contact information
- a one-page cover letter