## Research Engineer position:
## Virtual Reality Application for Rehabilitation

**Context:**
In the context of neurodegenerative diseases (e.g., Parkinson's), a field of research focusing on physical rehabilitation programs has recently developed. Rehabilitation involves the repetition of certain movements, most often using equipment. Recently, physical rehabilitation programs have integrated tools allowing visual feedback to the patient on the movements he is performing. Among these tools are video screens, robotic interfaces and virtual reality (VR). VR makes it possible to imitate the physical presence of a user, via a 3D avatar, in a real or imaginary world allowing them to evolve in a secure environment. In this context, the REVEIL project (Rehabilitation via a Virtual and Interactive Environment at home) has been proposed to assess the use of a VR application included in a rehabilitation protocol, in addition to the sessions offered by the care center.

**Goal of the REVEIL project:**
The project aims to develop an interactive VR application in order to motivate patients to perform rehabilitation exercises in addition to sessions offered by the care center. The use of VR will be assessed in the framework of a rehabilitation protocol held in the Rehabilitation Center of Mulhouse (CRM: https://www.arfp.asso.fr).

**Missions:**
In this context, the recruited person will be mainly involved in the development of the VR application. In particular, she/he will work on:
- The clarification and the definition of the specifications in collaboration with researchers and therapists
- The development of the VR application prototype allowing users to evolve within a virtual environment while exercising
- The integration of the interactive part including human motion analysis for assessing exercises performed by patients. For that, recent pose estimation algorithms like BlazePose (https://google.github.io/mediapipe/solutions/pose.html) will be employed
- The setup of first trials in a real-world context in the CRM to validate the feasibility

**Prerequisites**:
Applicants must have a Master Degree or Engineering Degree in Computer Science and demonstrate interest/experience in the field of virtual reality. We are looking for a highly autonomous profile with good programming skills (especially in C# and Python). A first experience in virtual reality with Unity 3D and/or human motion analysis would be very welcome.

**Working conditions:**

- Duration: 13 months
- Starting date: As soon as possible
- Gross salary: 2300 €/month
- Location: Université de Haute-Alsace, Mulhouse

**Working environment:**
The recruited person will be integrated within the IRIMAS research institute and will work more specifically in collaboration with Dr. Maxime Devanne from the MSD team and with Dr. Géraldine Escriva-Boulley from the LISEC Lab. She/he will benefit from the laboratory's computing servers and VR tools as well as a dynamic and stimulating scientific environment. Moreover, frequent interactions with CRM's therapists are expected.

**Contact:**
Please contact Maxime Devanne (maxime.devanne@uha.fr) and Géraldine Escriva-Boulley (geraldine.escriva-boulley@uha.fr) for more information about this position or for application.
**Application deadline: March 31st**