**Title: Doctoral Position in VR/HCI - Human Emotion Recognition in VR Systems for Remote Telepresence and Collaboration for Training and Education Purposes**

Keywords: human emotion recognition; virtual reality systems; remote telepresence; collaboration; training; education purposes; machine learning; computer vision; user studies.

**Context:**

Human emotion recognition in VR systems for remote telepresence and collaboration [1]in training and education is an important research topic because it has the possibility of altering how we interact with others remotely [2]–[4]. Even though virtual reality (VR) technology enables the creation of immersive and realistic environments for remote collaboration, the lack of nonverbal cues and emotional expression can hinder the effectiveness of such interactions [5], [6]. Although some of the latest VR headsets are equipped with facial expression tracking technology allowing for the "enfacement illusion" [7] there are still potential problems that could arise. For instance, different hardware and software may have varying interpretations of the same tracking data, leading to discrepancies in how facial expressions are represented [8], [9]. Moreover, not all participants may be able to afford high-end devices capable of accurately tracking and rendering facial expressions [10]. We can bridge this gap by introducing a system that recognizes emotions in VR environments, attempting to make remote telepresence and collaboration more efficient, interactive, and affectively rich.

Also, recognizing human emotions in VR systems could make training and education better[11]. VR has been demonstrated to be an effective training tool in various fields[10], but the absence of emotional feedback can hinder the learning experience [5], [6]. In virtual reality, an emotion recognition system can feed back to students instantly, letting them know how their choices and actions make them feel so they can adapt their actions and decisions [12]. This can lead to more effective and exciting learning.

Overall, research on human emotion recognition in VR systems for remote telepresence and collaboration for training and education purposes is essential because it has the potential to improve the way we interact with others remotely, improve the effectiveness of training and education, improve mental health and wellbeing, and provide commercial opportunities. Effectively integrating emotion detection into VR environments can potentially change many companies and areas.

**Research Program**

Human emotion identification in VR systems for remote telepresence and cooperation for training and education requires multiple stages of study and development.

Initially, a thorough examination of emotion identification technologies and VR systems would be done. This would require assessing the pros and cons of facial expression recognition, physiological monitoring, and speech analysis to determine which are optimal for VR situations.

Next, a VR-integrated emotion recognition system would be created. This involves choosing the best emotion recognition methods, designing algorithms and models, and integrating them into the VR system. The system must be precise, rapid, and sensitive to emotional changes.

User studies would next assess the emotion detection system's ability to improve VR training and education remote telepresence and cooperation. In these research, individuals would interact remotely in VR and measure how the emotion identification system affected their emotional involvement and collaboration.

Lastly, the research program would disseminate findings through high-quality publications and conference presentations. This would entail sharing the user study results, best practices and standards, and emotion recognition system design and execution with the academic community, industry partners, and the public.

The ultimate goal of the research program on human emotion recognition in VR systems for remote telepresence and collaboration for training and education is to advance emotion recognition technology and develop practical and effective solutions that can be integrated into VR environments to enhance remote telepresence and collaboration for training and education.

**The candidate**

We are seeking a highly motivated doctoral student to join our team and conduct research on human emotion recognition in virtual reality (VR) systems. The project aims to develop an emotion recognition system that can be integrated into VR environments to enable remote telepresence and collaboration for training and education.

The successful candidate will be responsible for the following:

Conducting a comprehensive review of existing emotion recognition methods and their application in VR systems

Designing and implementing an emotion recognition system that can be integrated into a VR platform

Conducting user studies to evaluate the effectiveness of the emotion recognition system in enhancing remote telepresence and collaboration in VR for training and education purposes

Contributing to the dissemination of research findings through high-quality publications and conference presentations

The ideal candidate should have the following:

A Master's degree in Computer Science, Human-Computer Interaction, or a related field; or a proven track record of successful research as an undergraduate.

Experience with developing VR applications

Programming skills in Python, C++, or other programming languages commonly used in machine learning and computer vision; or willingness to become proficient.

Programming skills in C# and Unity or Unreal Engine.

Good communication skills and ability to work in a team

Working knowledge of the French language or willingness to learn it.

We offer a dynamic and stimulating research environment, access to state-of-the-art VR equipment, and the opportunity to collaborate with leading researchers in the field. The successful candidate will be supervised by and work with [Diego Monteiro](https://scholar.google.com/citations?user=mlOAPaAAAAAJ&hl=en) at ESIEA in Laval, co-supervised by [Geoffrey Gorisse](https://scholar.google.fr/citations?user=UVfLH64AAAAJ&hl=fr) and directed by [Simon RICHIR](http://simonrichir.fr/simon-richir/) both from ENSAM - Arts et Métiers.

To apply, please send your CV, a letter of motivation, and the names and contact information of two referees to diego.vilelamonteiro@esiea.fr. Applications will be considered until the position is filled.

We are an equal-opportunity employer and welcome applications from all qualified candidates, including women, minorities, and individuals with disabilities.

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