



European Project Semester

PROJECT OUTLINE

Project dates: March – June 2025

Title: Insights Symbiosis and Digital Affects (InSyD'IA)

Project activity areas: Artistic Creation, Immersive Design, Interaction Analysis, Emotional Engagement.

Keywords: Virtual Reality, Symbiosis, Human-Machine Interaction, Emotional Response

Tutor's name and coordinates

Project origin

Client – End-user: Fans4All research consortium (<https://fans4all.org/>), A partnership with Parvis scène nationale is being considered.

IUT TARBES

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Project technical background:

The installation focuses on creating an immersive and interactive VR environment where the user experiences emotional and physical sensations in response to virtual space interactions.



The project presents exciting technical and narrative challenges that align directly with the engineering skills and technologies you're already familiar with. We're looking to design and develop (Unity or Unreal Engine) an advanced immersive and interactive environment, with 3D virtual spaces closely tied to specific emotional responses that we want to understand through body movement and attitude analysis.

This requires designing and fine-tuning an advanced multimodal capture system—tracking body movements, eye direction, and possibly even physiological signals like heart rate or stress responses. Your expertise with Lidar sensors, cameras, and real-time data processing software will be crucial in tackling this. Imagine the possibilities of working on how emotions, like fear, nostalgia, eagerness or happiness, can be physically characterized and how we can accurately capture or reflect these in a virtual setting.

We'll need innovative methods to interpret the collected data, transforming it into meaningful representations of emotional and physical states.

Your experience in data analysis or interest in generative AI could play a pivotal role in this, potentially leading to algorithms that shape visual avatars or create dynamic, responsive environments. Based on this preliminary work, we can further imagine

contributing to an interactive system where the environment itself evolves based on real-time emotional data.

We'll also organize test sessions with participants, exploring various scenarios within these virtual environments, collecting real-time data, and refining the system with each trial.

It's an exciting, iterative process where engineering expertise will directly shape the emotional and immersive impact of the experience. The challenges are technical, but the outcomes could redefine the boundaries between the virtual and physical, offering a chance to push the limits of both immersive technology and emotional intelligence. Your skills would be instrumental in bringing this vision to life.

Studied topics:

- Creating, integrating and testing 3D visual and interactive universes that stage different types of emotions
- Defining the technical and experiential objectives for the immersive installation, including the integration of motion capture systems, VR technology, and tracking emotional and physiological responses.
- Designing the physical and virtual environments, along with the software infrastructure, to capture and process participant data in real-time.
- Conducting tests to refine the capture of body movements, lighting dynamics, and VR interactions, ensuring precise data collection and an immersive experience.
- Utilizing Lidar data to digitally stylize participants' body contours and transform them into visual avatars
- Finalizing the visual content and presenting the results through an artistic exhibition, highlighting the symbiosis between the human body and virtual space.