

Internship Proposal: Exploring the Anthropology of Virtual Interaction and Human-Agent Perception in VR

Supervisors: Étienne Peillard (IMT Atlantique)

Duration: 4-6 months

Context and Background

Virtual Reality (VR) platforms such as *VRChat* have become more than just tools for entertainment; they are now immersive environments where users interact, socialize, and live extensive parts of their lives. While researchers strive to make VR interactions more natural and intuitive for everyday users, a subset of highly experienced users already exhibits a remarkable ability to engage in naturalistic interactions despite the limitations of current hardware (headsets, controllers).

Simultaneously, there is increasing interest in understanding how users in these virtual environments perceive and interact with AI agents, often represented as avatars that appear indistinguishable from human-controlled avatars. What makes a virtual interaction feel “human”? Can AI agents be perceived as fully “human” in these environments, and what are the anthropological and cognitive mechanisms behind this perception?

This internship proposes to explore these topics through a multidisciplinary lens combining VR technology, anthropology, and cognitive science.

This internship offers a unique opportunity to explore how users deeply immersed in virtual worlds experience and adapt to these environments. By combining anthropological insights with cutting-edge VR research, the intern will contribute to a growing understanding of how we as humans perceive and interact with both human and AI entities in virtual reality.

Research Objectives

1. Understanding User Habituation to Virtual Worlds

Investigate how long-term users of platforms like *VRChat* adapt to the limitations of VR hardware to achieve natural interactions. Through interviews and behavioral observation, the project aims to uncover:

- The cognitive and sensory processes users develop to compensate for the lack of full-body tracking and haptic feedback.
- How users perceive and experience their virtual bodies (avatars) as extensions of their own selves.
- How these users manage fine social interactions (e.g., eye contact, hand gestures) and communication within these virtual spaces.

2. User and Agent Interaction: Defining Human and AI Boundaries

Explore how VR users perceive the presence of other human avatars and how they distinguish between human-controlled avatars and AI agents. The study will focus on:

- Identifying the behavioral, verbal, and visual cues that signal “humanness” in a VR interaction.
- Investigating how experienced users perceive and interact with AI agents that are represented by human-like avatars.

- Determining how AI agents can be designed or programmed to evoke more human-like interactions and whether these interactions can reach the same depth as human-human interactions in virtual spaces.

Research Questions

1. What are the cognitive and motor processes that allow experienced VR users to interact so naturally in virtual spaces despite hardware limitations?
2. What specific cues—movement, voice, behavior—do VR users rely on to perceive another avatar as controlled by a human or an AI agent?
3. How do users emotionally and cognitively engage with AI agents compared to human users in VR environments?

Methodology

- **Interviews:** Conduct qualitative interviews with experienced *VRChat* users to explore their adaptation process to the virtual environment and hardware. Interviews will also focus on their perceptions of interacting with both human avatars and AI agents.
- **Behavioral Observations:** Observe users during in-game interactions to identify behavioral patterns and cues that distinguish human-controlled avatars from AI agents.
- **VR Experiments:** Design controlled VR experiments where participants interact with both humans and AI agents without prior knowledge of which is which, analyzing their responses, choices, and behaviors.
- **Surveys:** Administer post-interaction surveys to measure subjective experiences, feelings of presence, and emotional engagement.

Skills Required

- **VR Familiarity:** Knowledge of virtual reality platforms (e.g., *VRChat*, *Cluster.mu*), especially regarding user interaction.
- **Anthropological and Cognitive Science Insights:** Interest in human perception, social interaction, and cultural practices in virtual environments.
- **Research Methods:** Experience with or willingness to learn qualitative research methods such as interviews, participant observation, and surveys.
- **Technical Skills** (optional but preferred): Familiarity with VR hardware and software, and basic programming skills (Unity, Unreal) for the creation of VR experiments.

Learning Outcomes

- Develop a deep understanding of how experienced users adapt to virtual environments and the implications for VR interface design.
- Gain insights into the anthropological dimensions of human-AI interaction in virtual spaces.
- Learn how to conduct interdisciplinary research at the intersection of VR technology, anthropology, and cognitive science.

Expected Deliverables

- A detailed report on user habituation processes in virtual reality environments.
- A comparative analysis of human-human and human-agent interactions in VR.
- Suggestions for improving VR interfaces to enhance the naturalness of everyday interactions for new users.
- A paper or presentation summarizing key findings for submission to a relevant conference (e.g., IEEE VR, CHI, or anthropology conferences focusing on digital culture).