

# Identification and authentication of people through hand movements

Project Group “Praxis der Forschung”  
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## 1 Background

Extended Reality (XR), including Virtual Reality (VR) and Augmented Reality (AR), is emerging as one of the most important topics of the next decade. The main idea is to merge the virtual and real worlds into one experience for the user. Examples such as the Metaverse do this by fully immersing users in their virtual worlds and creating avatars (i.e., digital twins) to represent the users in that virtual world, using motion tracking technologies such as integral measurement units (IMU) to transfer the user’s movements to these avatars to allow for seamless interaction with the virtual world. As with any new technology, the ability to track and capture users raises privacy and security issues that need to be addressed.

## 2 Goal

In this project, we specifically look at capturing hand motions using IMU sensor gloves in XR scenarios. We are interested in whether the captured motions can be used to identify users and what privacy issues may arise from this. On the one hand, identifying users from their hand movements can lead to novel authentication techniques that help to secure access to computer systems. On the other hand, identification poses a privacy problem because it can potentially be used by malicious actors to track you across different applications and scenarios. Therefore, it is important to understand how much identifiable information can be extracted from hand movements. To accomplish this task, we will provide you with a novel IMU sensor glove that can be used to capture hand motions.

## 3 Contact

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