Human Motion for User Identification

Forschungsinstitut Cyber Defence
Universität der Bundeswehr München

Bachelor/Master Thesis

Human movement can come from the interplay of many parts of the body, each body part contributing to a movement to a more or lesser extent. For every person, the movement may look slightly different, resulting in a different, unique behavior. Here it is of particular interest, how unique each movement behavior is. Can we identify a person by their movement?

In the field of biometric security systems, a goal is to find new methods to identify users. If we can identify users by tracking movement in the background, systems can be designed more securely. For example, if a house finds an unusual person entering, the security alarm can be triggered. A further motivation of user identification is adaptive systems. If the system can infer who the user is, the system can automatically provide personalized content and user interfaces.

In this project, the student investigates the uniqueness of body movement. By using state of the art motion tracking with a motion tracking suit, a computer system can monitor how users move. The project involves data collection of users' motion. Then, the motion is analysed with basic machine learning methods. This allows to compare different parts of the body, with regards to how unique a person's movement is compared to other persons.

Tasks:

- Review of related work
- Development and implementation of a data collection software
- Conducting a user study to collect human motion data
- Analysis of the data of the study

Requirements:

- Interest in designing and conducting user studies
- Independent scientific work and creative problem solving

Contact:

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