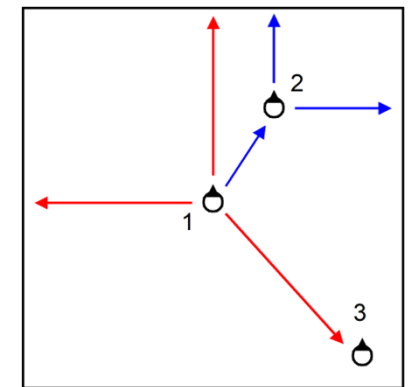
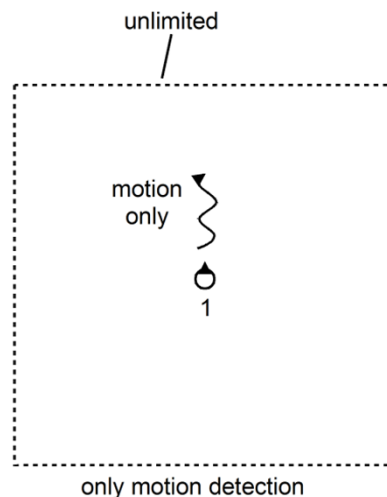


Cascading Positional Data

Keywords: Virtual Reality, Tracking, Computer Vision

Overview

Virtual Reality (VR) is gaining attention in many fields, such as entertainment and industry. Recent development allows for navigating a virtual environment by real walking, thanks to the SLAM technology, which localizes a user's position and builds a map on the fly. For doing so, this technology relies on visible static features in the tracking space, while other users are filtered out and not considered for positional tracking. Hence, the system presumes that each user can track his position individually.



daisy-chaining of positional information

Tasks

Current tracking systems in VR arenas use SLAM technology and presume each device can localize autonomously. In the case of a multi-user setup, all devices transfer their positional information to a central server so that avatars will be displayed at the respective positions of the users. However, this approach only works if the size of the tracking space is, at most, an area of 30x30m. For larger areas, the cameras of the HMDs cannot see the static features anymore, and thus the user loses tracking. Such a tracking loss could be avoided if the other users' positions can be measured and considered. Your task will be to develop such a daisy-chain tracking system. The results will be presented in an intermediate and final presentation and summarized in a written report.

Workpackages

- Literature research on SLAM tracking
- Development of the daisy-chain concept for tracking including error-budgeting
- Implementation of a test system
- Planning and conducting a technical test
- Evaluation of the achieved results
- Final presentation
- Written report

Skills

- Programming Skills in C++ or C#
- Unity and Computer Vision experience
- Strong communication and interpersonal skills

Results

The results of this thesis need to be summarised in a written report and will be presented to the ICVR in a 20min talk.

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