

Intuitive locomotion in virtual reality

Reference No: B78048

CHALLENGE

Virtual reality applications allow users to interactively explore and experience virtual worlds. **Intuitive controls and movement** are a key part in this experience as they create a sense of presence in the virtual world. The largest degree of **immersion into the virtual world** is achieved by closely tracking the real-world motion of the user and mirroring it in the virtual world. However, the real-world area the user can move around in is typically much smaller than the virtual world. Thus, alternate methods of locomotion have been implemented. Of those not requiring bulky additional hardware, such as treadmills, the walk-in-place method is the most intuitive. In this method the real-world movement of the user is tracked via the movement of the headset, and close agreement between real-world movement and movement perceived in the virtual world is maintained. As a consequence this strongly reduces the chance of experiencing **virtual reality sickness** (or cybersickness). Unfortunately, headset-tracking limits the range of natural movements since the direction of locomotion is given by the orientation of the headset, preventing the user from **looking around while moving forward**.

INNOVATION

The inventor has established a novel method for the **identification of the direction of motion independent of the users viewing direction** using additional body tracking sensors. For example, hand con-trolers that exploit the pendulum movement of the arm to predict the intended movement direction. The **degree of immersion using this method is high** because the effort of the user in the real world is mapped to a velocity of movement in the virtual world. Simultaneous headset-tracking strongly reduces the chance of experiencing virtual reality sickness.

COMMERCIAL OPPORTUNITIES

The invented method enables **natural head movement while exploring the virtual world**. The method can be applied in wide variety of virtual reality applications, ranging from the gaming industry to the training of skilled workers. Importantly, adoption of the invented method is straightforward since it is completely **compatible with existing body-tracking systems**. No additional hardware is required.

DEVELOPMENT STATUS

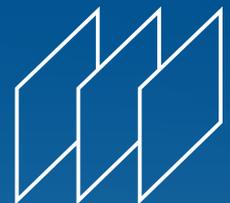
Prototype has been successfully tested.



Figure: Virtual reality inspection.

REFERENCE:

1 <https://youtu.be/kPFhmWQwXMI>



BayPAT

Technische
Universität
München



Technology from
TECHNICAL UNIVERSITY
OF MUNICH

IP rights:
filed in 2018
EP (pending)

Contact:
Dr. Immo Söllner
+49 (0) 89 5480177-17
isoellner@baypat.de

**Bayerische
Patentallianz GmbH**
Prinzregentenstr. 52
80538 München
www.baypat.de