



Ein Unternehmen der
Johann Wolfgang Goethe-Universität
Frankfurt am Main

Innovative Mixed Reality Training Solution for Healthcare Professionals

Technology Offer

Benefits

- **Game changing solution for mixed reality training of medical students or staff**
- **“Off-the-shelf” availability, independent of available patients or teaching staff**
- **Exciting combination of the physical and digital medical situation**
- **Improved understanding of examination mechanism by included pathology**
- **Training can be repeated indefinitely**
- **Significant cost reduction**
- **Developed technical solution suitable for many other medical trainings**

Project Status

- **Prototype manufactured and tested in a clinical environment**
- **Concept presented e.g. at the German Surgery Congress**

Patents

- **Europ. priority patent application: 23215258.7 filed on 08.Dec.2023**

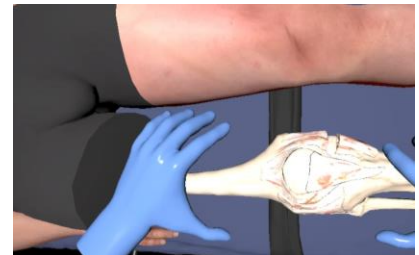
Offer

- **Technology can be licensed or assigned**
- **Collaborations for further development welcome**

Scientists from Goethe-University Frankfurt am Main (Germany), Frankfurt University Medical Center and MaibornWolff GmbH have successfully developed a new mixed reality solution that could be a game changing element for future medical training. The approach addresses the challenge of limited resources available for medical training and offers unique solutions for improved performance and functionality. Measures have been taken to improve immersion and user experience. A first proof-of-concept is created with focus on common injuries to the knee joint.

Differentiated but complex clinical examination methods are available for the correct diagnosis of common injuries. However, young doctors have to be trained on the proper diagnostic processes, but training resources are always limited and partially quite expensive. Patients with corresponding indications are not always available for adequate training. In addition, some trainings can end up in a painful patient experience.

A mixed reality medical education solution is therefore a perfect and resources saving option. The invention offers a close to reality examination whereby medical pathologies can be learned directly, realistically and dynamically. The invention does not only offer a whole new user experience but is characterized by essential details like latency minimization, ambient occlusion, lighting, intuitive menu navigation and smooth overlapping of the hands to compensate for deviations.



First insight into what the mixed reality solution looks like.

Technical details for a great user experience have been newly developed like a low-latency sensor hierarchy and an intelligent combination of inclination/acceleration and gyroscope sensors. A patent application has been filed for those essential advancements. These technologies could be a cornerstone of future multiple mixed reality medical training systems.

In addition, selection of the relevant different pathologies is carried out using a newly developed and integrated adjustment unit. For example, a cruciate ligament rupture is realistically simulated, and the examination can be practiced just like on a real patient. An anatomical examination model, including a realistic pathology representation, was developed not only to motivate junior staff, but also to provide them with the best possible training. Pathophysiological understanding behind the examination techniques is promoted in a way never seen before.

The Frankfurt University and MaibornWolff team welcomes collaboration opportunities with industry partners interested in leveraging the technology for mutual benefit and transferring the invention towards market exploitation. Interested parties are invited to experience the system firsthand and observe its practical functionality.

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