

The AR Apprenticeship

Replication and Omni-directional Viewing of Subtle Movements

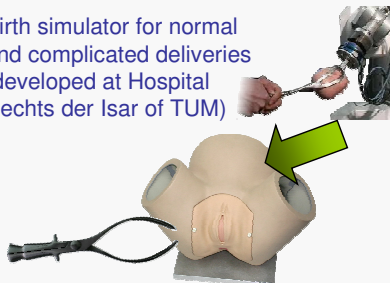
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Exemplary scenario: Delivery Simulator with AR visualization for Medical Education and Training
 [Sielhorst, Obst et al., AMI-ARCS@MICCAI 2004]

Birth simulator for normal and complicated deliveries (developed at Hospital Rechts der Isar of TUM)



AR visualization system RAMP (Sauer et al., 1999-2004, SCR)



Additional external infrared tracking from A.R.T.



The Challenge

Medical training is done efficiently through observing expert's action and trying to reproduce it on phantoms or patients. But what if the expert is not always available for teaching or giving feedback?



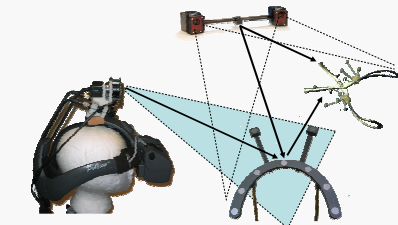
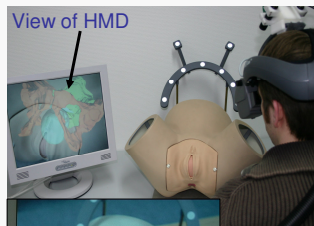
Our Solution

Exact 3D Replication and AR Visualization of Expert's Movements

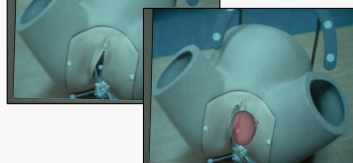
1. Recording expert's performance
2. Replication of his subtle movements
3. Recording Trainee's performance.
 - Comparing own movements with expert's provides strong feedback
 - Omni-directional viewing makes this an active experience in contrast to watching videos

If Michelangelo's movements were recorded with this system, we could learn his artistic techniques today by letting his virtual tools act again.

Current setup

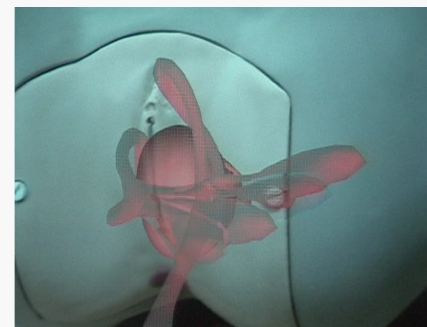


Inside-out and outside-in visual tracking



Simulator with and without augmentation

Replication and omni-directional viewing



AR Simulator with replay of expert's movements

Acknowledgements: Authors would like to thank F. Sauer, A. Khamene and S. Vogt for providing the RAMP system, and R. Brugkart, T. Obst and R. Riener for providing the birth simulator.