

Stefan Wiedenmaier, Olaf Oehme

### Test Bed for Augmented Reality Supported Assembly

Augmented Reality (AR) systems are often refused by potential users even if their technical performance is good. Their problem is that they are not designed in a user-friendly way. Experiences made with an AR-supported assembly scenario have shown that workers have appreciated the AR-supported assembly when some basic usability aspects have been taken into account.

The demo presented on the ISMAR shows a test bed for AR-systems supporting assembly tasks. Nowadays, the rendering objects for most of the AR-applications are close to the CAD-models used for virtual reality. This proceeding is certainly well-suited for highly immersive applications, where the augmented object should be part of the environment represented in the HMD. There are examples for highly immersive applications in AR-applications for architecture and medicine. AR-applications for assembly need not to be necessarily highly immersive. The most important steps for assemblers are finding the right assembly object and place as well as a simple description of the task. After this information capturing process the assembler needs no further AR-support when executing the motor function.

For the experimental testing of many parameters in AR-supported assembly the following test bed and procedure has been developed:

Test subjects have to grasp a little wooden cylinder in a box. By passing a flap to accede to the cylinder the computer gets a mouse signal to write the time into a log-file and to show the assembly position on a pegboard in a head-mounted display. After putting the cylinder in the right hole on the pegboard subjects grasp the next cylinder. The pegboard in fig. 1 has been derived from the Purdue Pegboard.

First tests have been executed to measure the task assembly performance using different HMDs as well as different objects and different arrangements of objects.

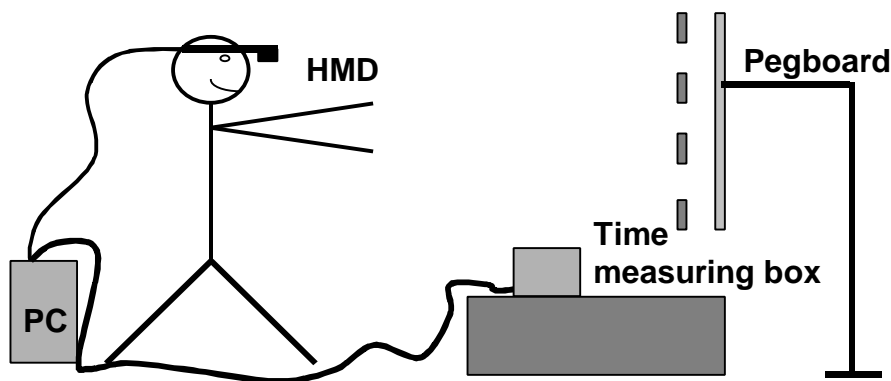


Figure 1