

Assignment for a programmer with some design affinity or vice versa

TELEPRESENCE TEST LAB IN VR

In short

Your job	Develop an open source virtual telepresence lab in which the effects of various VR and telepresence-related settings can be compared as participants go through various levels controlling a virtual robot.
Your goal	To enable researchers to easily evaluate the effects of various settings in VR; to provide participants with a fun testing ground.
Possible solutions	A VR test environment with various robot-control levels and a couple of adjustable settings. User performance statistics are logged. The focus (level design, the adjustable settings, research comparing settings) can be adjusted based on your own preference.
About you	<ul style="list-style-type: none"> You want to learn more about VR, Unity, Oculus Quest You like to develop and test new concepts, together with end-users

Reason for this assignment

Some fire departments in the Netherlands have started experimenting with unmanned, remote-controlled vehicles, to venture into areas where it is unsafe for human firefighters to go. For the Firebot project, we are developing a VR/AR telepresence system, but there are still many basic questions concerning VR and remote imagery that have not yet been answered. We would like you to build a virtual telepresence lab developed in which these questions can be investigated.

Your job

This means the lab should provide a couple of levels with a robot that should investigate a disaster or fire scene, so participants will be able to perform multiple levels while we compare the effects of various settings. As a minimum viable product, the setup should emulate a telepresence situation, meaning the visible environment depends on the location and camera history of the robot. The lab should log various statistics, so we can compare the performance of participants in the various conditions. We want this virtual lab to run on an Oculus Quest, preferably untethered.

The lab could support a number of settings to be compared, such as different points of view with respect to the robot, different screen resolutions, different delays, different controls, and 3d with a limited field of view vs. 360 vs. (normal) 360 3d. Part of your graduation could be to already run tests to compare the performance results for some of these settings.

Your client

Lectorate Ambient Intelligence (AmI) is a research group that specializes in making our environment smart. Their research comprises the fields of embedded systems, data science and augmented interaction. Examples of their projects can be seen at www.saxion.nl/ami. Reimbursement is 230 euros per month.