

*Long range hand interactions with large displays (2 people)*

*Supervisor: Dr. Roel Vertegaal*

Science-fiction films such as *Minority Report* have imagined future computer interactions that take place in mid-air with simple hand movements and gestures. Recent developments in software and hardware in the Human Media Lab have made this fiction a reality. The selected team will build on current lab work involving gestured input and ultimately implement long range interaction software and systems. Students will work with a pre-existing hardware platform and expand data capture and processing software, as well as develop applications to interact with.

*DisplayObjects: an organic mobile-device prototyping workbench (2 people)*

*Supervisor: Dr. Roel Vertegaal*

Current techniques for designing mobile devices involve separate design workflows for hardware and software. Current research efforts at the Human Media Lab aim to bridge this gap to create a futuristic, fully-integrated and flexible workbench. Using the Vicon motion-capture system, the selected team will build upon an existing software platform to create a next-generation projection-based implementation and gestured input styles, finally bringing device design to artists' and engineers' fingertips.

*Calibration-free remote eyetracking interfaces for the Xuuk eyebox2 (2 people)*

*Supervisor: Dr. Roel Vertegaal*

Current eyetrackers can determine up to 1 cm accurately where you are looking on a screen, after calibration. This project involves the development of computer vision algorithms that allow remote use of the Xuuk eyebox2™ as an eyetracker, without calibration. It builds upon work in the Human Media Lab on calibration-free technologies such as ViewPointer, a wearable, calibration-free eye tracker that has been applied to hearing aids, amongst others. Application of the developed system in an interface design project of choice.