HPI Hasso Plattner Institut
IT Systems Engineering | Universität Potsdam

8 square meters, 8 megapixels, 10 months:
# Multitoe III: interaction across groups of users on a multi-touch floor

Goal

In 2009/2010, the HCI bachelor project multitoe created multitoe, the interactive floor with "toe-size" tracking resolution (google "*multitoe*" to see what came out of it). The moderate size of their prototype, however, limited the interaction to feet.

A few months ago, we completed the full 8m^2 installation in the multi display lab of the new building. Using a JVC **12 mega pixel projector** and our **13 mega pixel camera,** the camera-based track-ing system allows us to observe the entire room from below.

Multitoe from above…
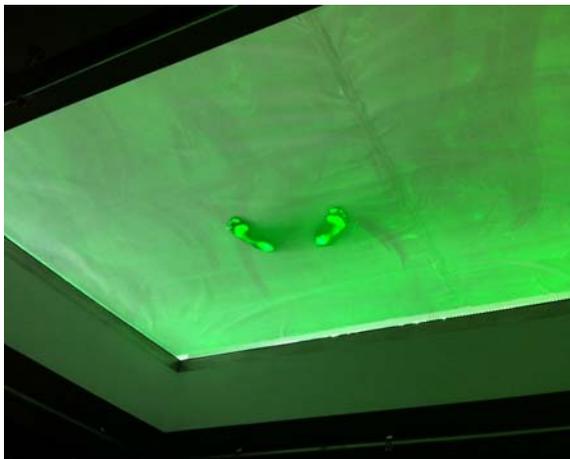
and from below…

Based on the floor prototype, you will create a range of **demo applications that involve multiple people**. Some of the questions you will be tackling:

(1) how can people collaborate on the floor?
(2) scale the tracking framework to large size
(3) integrate the concept of foot and whole-body interaction with Microsoft Kinect
(4) have fun: write a gaming application that uses the full potential of the floor, such as a live-size sports game.

Finally, you will evaluate your applications in a series of user studies as common in Human-Computer Interaction and write up your findings. Given the right results, we will support you in publishing the results.

External Partner

Microsoft Research, Cambridge, UK
The project will be integrated with our Human-Computer-Interaction research group, so **expect help and mentoring** from all of us, as well as your external partners Shahram Izadi and Steve Hodges at Microsoft Research Cambridge.

Prototyping

You will develop software and contribute to the floor hardware in parallel.

Skills

During the project you will **learn** the basics of computer vision, multitouch, how to build large mechanical things, how to write graphics-intense

Recognizing users based on sole patterns

applications, and how to design and run a user study. While knowledge of HCI2 and Graphics is clearly helpful, we do not expect you to know any of these things in advance, but we do expect you to be interested in learning them.

Group structure

4-7 students. Roles, areas of responsibilities and specialization will be defined in the first week.

Questions?

Email us at wimi-baudisch@hpi.uni-potsdam
or come see us in the multi display lab (new HPI building, H.2 Atrium)
Project page:
www.hpi.uni-potsdam.de/baudisch/projects/multitoe.html

How everything started