HOCHSCHULE BREMEN
UNIVERSITY OF APPLIED SCIENCES

Hochschule Bremen • Flughafenallee 10 • D-28199 Bremen

Fakultät 4
Elektrotechnik und Informatik

Prof. Dr.
Jörn Loviscach

Telefon
+49 (0) 4 21/59 05-54 87
Telefax
+49 (0) 4 21/59 05-54 84
E-Mail
joern.loviscach@hs-bremen.de

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Evaluation of the Master's Thesis
Large-Group Games with a Motion- and Orientation-Sensing Game Controller
by Ilham Abiyasa Suhardi

In his thesis, Ilham Abiyasa Suhardi examines how to support a larger number of players each of whom interacts with the game through a Wii Remote controller. This research concerns technical issues such as how to connect with more devices than usual and how to interpret the user's input. Another vital part of the work concerns HCI research and consists in the comparison of several way to steer on-screen characters with the Wii Remote.

Chapter 1 introduces the topic and provides basic motivation. Chapter 2 surveys related work on large-group games, the Wii Remote's technology, and a selection of its uses in commercial games as well as in research projects. Chapter 3 is devoted to the design of the underlying client-server system to connect a larger number of Wii Remotes. The prototypical game and the different interaction modes devised for it are described in chapter 4. Chapter 5 details the implementation of the client and the server software. The evaluation of the system is covered in chapter 6. Chapter 7 concludes the thesis. The appendix describes how to download, compile, and use the software.

The thesis calls addresses a substantial range of practical topics in computer science, including game design and software development with a game engine, distributed data processing, and processing of controller input. Thanks to the .NET environment, the Irrlicht game engine, and the third-party library employed to communicate with the Wii Remote,

the source code looks mostly like the implementation was accomplished in a straightforward manner. One exception that has to be noted, though, is the translation of the sensor signals into control data: The method employed for the infrared-sensitive sensor maps the full *xy* domain of the sensor to the screen, which results in poor behavior along the edges, as invariably one beacon will move outside of the sensor's range. The less-than-optimal behavior in this control mode is also mentioned in the thesis, but should have been corrected.

On the scientific side, the thesis offers a survey of systems for large-group interaction and a survey of existing applications of the Wii Remote in research projects. However, this discussion is weak on the side of commercial multi-player games on the Wii. Given that the thesis deals with methods to steer on-screen characters, there should be an in-depth discussion of the existing methods for this type of interaction, possibly giving de-facto rules which types of control tend to be applied in which circumstances.

The selection of the input methods to be compared is reasonable, since it comprises a standard method for reference (gamepad), two methods each of which employs a specific sensor of the Wii Remote (infrared camera, accelerometer), and one group mode that is based on averaging several players' input and that can be combined with each of the basic three methods.

The game design of the prototypical game is sufficiently motivated for the research task of comparing different methods for control. Nonetheless, the thesis could provide more background on casual games.

The user test conducted on the system has the appealing feature of not examining, say, interaction speed in a toy situation, but instead looks at player performance and player satisfaction in a game that could very well be a real-world example. The statistics of the data look significant, even though this is not discussed in the thesis. In detail, one can argue about the validity of the test, since fixed groups of players and a fixed sequence of input methods are used. The thesis could have benefited from standard methods from statistics.

In total, the thesis displays clear practical achievements and useful results but leaves room for improvement in terms of science. Thus, I award a preliminary grade of 1,7.

Jörn Loviscach