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Human Computer Interaction within Industry Tools

Bsc. Computer Games Programming

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**Abstract**

This paper follows the development of a 3D computer games tool powered by a human computer interaction based device, the Microsoft Kinect.

Research was based around three fundamental areas required for the project. Human computer interaction (HCI), Image (more specifically the hand) recognition in real-time and finally terrain deformation within 3D graphics.

Using previously gained industry knowledge and details gained from my areas of research, an initial design prototype was created, followed by a small amount of user testing. Testing for ease of use, productivity and comparing against gestures natural within the real world.

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Abstract

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**Introduction**

**Research Question**

In the modern day games studio, artists and designers are often found using keyboard and mouse input to create scenes, art assets and such; for games. However, creative people have a tendency to work better with their hands. The keyboard and mouse input may limit their ability to do this.

I aim to create a simple tool (in the form of a terrain editing system), where the input is based upon the user within their 3D environment (via the use of the Microsoft Kinect device) as well as using other inputs such as the users’ voice. This creates an interface more in tune with its users’ tendencies resulting in the exploration of the users’ potential productivity gain and a potential higher quality of work. Where by the main complication in implementation will be finger tracking and hand gesture recognition, due to limitations in the current generation of the Microsoft Kinect hardware.

Posing the question, is current computer hardware limiting usability with its non-natural interface?

**Rationale for Project Choice**

I have had a life-long passion for tools within computer games, trying to make interfaces and systems as simple as possible for the user to interact with. My inspiration for this project was found whilst on work placement at ‘Blitz Games Studios’. Whilst there I spent time working on their tool system (‘Blitz Tech’) as well as working closely with game teams and at points the Microsoft Kinect. Whilst working I noticed how the artists, designers and animators used real-life models and scenarios to compare with their plans or creations. Using pen and paper as well as other input devices such as tablets to draft work before creating the asset within a 2D or 3D graphics computer tool.

With this, I have first-hand experience of how an artist works and how a programmer creates software. However the two do not necessarily correlate due to the differences in rational between artists and programmers. To expand on this, I have experience with user interfaces, tools graphics/rendering and the Microsoft Kinect.

**The Current State of Human Computer Interaction**

Human computer interaction (HCI) is an astronomical field of ongoing research. However the majority of such research is specific towards the general user and or non-computer user, attempting to allow non-technical people to interact with computer hardware. The problem lies in extracting data from the user in a manor most natural to them and evaluating the data for use with a device, as doing such is hard to generalize. Resulting in software that feels natural to some and not to others.

This problem is reduced when looking into to HCI within the games industry, as we can make the assumption that the user is somewhat technically minded. Already the user should have an understanding of current HCI making use of both the standard keyboard and mouse, as well as other artists’ specific input devices.