Can’t Touch This

Tim Visée & Nathan Bakhuijzen

September 2018

1 Problem Definition

Today's control of a computer is exclusively done through physical interfaces, whether this is through keyboards or other peripherals.

1.1 Motivation

At the start of this minor, students were given a choice in the subject of the research. Mister Hani introduced us to a series of subjects, of which the LeapMotion project was the most interesting to us. The idea of the LeapMotion was to create or extend existing software to enable people to control a computer without touching any peripherals.

1.2 Background information

The events that lead up to this question came from the medical industry. When surgeons perform surgeries, they often have to look through medical files, for example, an X-ray scan. This is difficult, as the surgeons most likely has dirty hands, and can therefore not touch any peripheral. Instead of viewing the documents himself, the surgeon has assistants that help him instead.

The use of assistants is a solution to the problem, but this requires another human, and personnel in the medical world is scarce. We therefore want to replace these human assistants with a device that allows surgeons to control the computer without touch any peripherals.

The people that are most interested in the results are software engineers, surgeons and hospital managers.

2 Goal of research

The problem owner wants us to develop a platform where users can record their own gestures and bind these to general computer actions. This allows other students to do more extensive and complex experiments.

3 Research Questions

3.1 Main question

Is it viable to control a computer with a touchless, gesture based interface?

In order to fully understand this question, we first need to define some terms:

- Viable
- Control
- Interface

We define **viable** as: More *efficient* than existing options or useful in specific environments.

By **efficient** we mean:

- *Faster* in use
- *Easier* in use
- *Reliable* (detection rate)
- (less) *Effort*

4 Nature of research

Our research is of an explorative, qualitative nature. This is because we have developed a platform where researchers can experiment with touchless control of a computer. The experiments that the researchers can perform have not been performed yet, so this means the research is exploratory.

5 Experiment setup

6 Research platform

6.1 Description

6.2 List of requirements (MoSCoW)

7 Appendix A.1

7.1 Article 1 title

7.1.1 Article 1 goal

7.1.2 Article 1 method

7.1.3 Article 1 conclusion

7.1.4 Article 1 relevance

8 Appendix A.2

8.1 Reference 1

8.2 Reference 2