



**UNIVERSITÄT  
BAYREUTH**

Fakultät Mathematik, Physik, Informatik  
Institut für Informatik  
Lehrstuhl für Serious Games  
Prof. Dr. Jörg Müller

## Big Master Project

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### The Haptic Printer

Author : **Anuj Sharma,**  
**Akshaya Kumar Krishnappa Ramakrishna**  
Supervisor : **Viktorija Paneva**

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*September 27, 2021*  
Version: Final



# Abstract

Over the years of evolution of human computer interaction, we have seen various kinds of interaction techniques. The recent trend of contactless haptic technology has been on the rise. In our project we focus to render custom shapes on the user palm, using different kinds of rendering techniques. The main objective of our project is to map various kinds of user input like CSV, SVG, drawing from canvas and inputs from leap motion. We try to accept these kind of inputs and process them in order to render custom shapes. Also, we try to analyse and compare the different techniques of rendering with validation techniques and deduce results from the study.



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# Introduction

## 1.1 Postcards: My Address

**Ricardo Langner**

Alfred-Schrapel-Str. 7

01307 Dresden

Germany

## 1.2 Motivation and Problem Statement

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

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[Jurgens:2000; Jurgens:1995; Miede:2011; Kohm:2011; Apple:keynote:2010; Apple:numbers:2010; Apple:pages:2010]

## 1.3 Results

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### 1.3.1 Some References

[WEB:GNU:GPL:2010; WEB:Miede:2011]

## 1.4 Thesis Structure

### Chapter 2

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## Related Work

“*A picture is worth a thousand words. An interface is worth a thousand pictures.*”

— **Ben Shneiderman**  
(Professor for Computer Science)

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### 2.1 Related Work Section 1

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## 2.4 Conclusion

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# System

“*Innovation distinguishes between a leader and a follower.*

— **Steve Jobs**  
(CEO Apple Inc.)

This is the second paragraph. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

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## 3.1 System Section 1

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**Fig. 3.1:** Figure example: (a) example part one, (c) example part two; (c) example part three

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## 3.2 System Section 2

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**Fig. 3.2:** Another Figure example: (a) example part one, (c) example part two; (c) example part three

And after the second paragraph follows the third paragraph. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

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### 3.3 System Section 3

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# Concepts

“Users do not care about what is inside the box, as long as the box does what they need done.

— **Jef Raskin**

about Human Computer Interfaces

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## 4.2 Concepts Section 2

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### 5.1 System Section 1

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## 5.2 System Section 2

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## 5.3 Future Work

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# Declaration

You can put your declaration here, to declare that you have completed your work solely and only with the help of the references you mentioned.

*Bayreuth, September 27, 2021*

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The Haptic Printer

