#### University of Munich

# Department "Institute for Informatics" Education and Research Units Media Informatics Prof. Dr. Heinrich Hußmann

#### **Master Thesis**

# Web-Based Creator for Activity Sculptures

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# Acknowledgements

# Zusammenfassung

Kurzzusammenfassung der Arbeit, maximal 250 Wörter.

# **Abstract**

Short abstract of the work, maximum of 250 words.

# **Task Definition** Kopie der Original-Aufgabenstellung I confirm that I indepently prepared the thesis and that I used only the references and auxiliary means indicated in the thesis. Munich, May 11, 2015

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# **Contents**

I	Intro	oduction	I
	1.1	Motivation	1
	1.2	Problem definition	1
	1.3	Goals	1
	1.4	Content overview	1
2	Back	kground & Related Work	3
	2.1	Product Customization Software	3
		2.1.1 Usability Aspects	3
		2.1.2 Technological Limitations	3
	2.2	Activity Sculptures	3
	2.3	Digital Visualization & Fabrication Workflows	3
	2.4	Summary	3
	2.4	Summary	J
3	Prot	otype Design	5
	3.1	Requirements	5
	3.2	Sculpture Design	5
	3.2		5
		1	
		3.2.2 Activity Landscape	5
		3.2.3 Activity Flora	5
		3.2.4 Activity Vase	5
		3.2.5 Prototype Validation	5
	3.3	Configurator Design	5
		3.3.1 Ideation Process	5
		3.3.2 Prototype Validation	5
	3.4	Summary	5
4	T1	1	7
4	-	lementation	
	4.1	Requirements	7
	4.2	Technology Stack	7
	4.3	Configurator Architecture	7
		4.3.1 Withings API Integration	7
		4.3.2 Data Modeling	7
		4.3.3 Data Disposition	7
			7
		4.3.5 Sculpture Generation & Rendering	7
	4.4	Summary	7
5	User	: Study	9
	5.1	Study Design	9
	5.2	Questionnaire	9
	5.3	Participants	9
	5.4	Procedure	9
	5.5	Limitations	9
	5.6	Results	9
6	Con	clusion 1	11
7	Ent.	are Work	13
,	rutt	IIV YVIIN	ر،

Αŗ	Appendix		
A	Online Questionnaire	14	
В	User Study Results  B.1 Questionnaire Results	<b>14</b> 14 14	
C	Prototype Sketches C.1 Sculpture Prototypes	14 14 14	
D	Code Snippets	14	
Co	ontents of the enclosed CD	15	

#### 1 INTRODUCTION

Introduction

# 1 Introduction

- 1.1 Motivation
- 1.2 Problem definition
- 1.3 Goals
- 1.4 Content overview

1.4 Content overview 1 INTRODUCTION

#### 2 BACKGROUND & RELATED WORK

Background & Related Work

# 2 Background & Related Work

- 2.1 Product Customization Software
- 2.1.1 Usability Aspects
- 2.1.2 Technological Limitations
- 2.2 Activity Sculptures
- 2.3 Digital Visualization & Fabrication Workflows
- 2.4 Summary

#### 3 PROTOTYPE DESIGN

Prototype Design

# 3 Prototype Design

- 3.1 Requirements
- 3.2 Sculpture Design
- 3.2.1 3D Graph
- 3.2.2 Activity Landscape
- 3.2.3 Activity Flora
- 3.2.4 Activity Vase
- 3.2.5 Prototype Validation
- 3.3 Configurator Design
- 3.3.1 Ideation Process
- 3.3.2 Prototype Validation
- 3.4 Summary

#### 4 IMPLEMENTATION

#### Implementation

# 4 Implementation

- 4.1 Requirements
- 4.2 Technology Stack
- 4.3 Configurator Architecture
- 4.3.1 Withings API Integration
- 4.3.2 Data Modeling
- 4.3.3 Data Disposition
- **4.3.4** Real Time Single Page Applications
- 4.3.5 Sculpture Generation & Rendering
- 4.4 Summary

## 5 USER STUDY

User Study

- 5 User Study
- 5.1 Study Design
- 5.2 Questionnaire
- 5.3 Participants
- 5.4 Procedure
- 5.5 Limitations
- 5.6 Results

5.6 Results 5 USER STUDY

## 6 CONCLUSION

Conclusion

# 6 Conclusion

## 7 FUTURE WORK

Future Work

# 7 Future Work

# **Appendix**

- **A** Online Questionnaire
- **B** User Study Results
- **B.1** Questionnaire Results
- **B.2** Heat Map Images
- **C** Prototype Sketches
- **C.1** Sculpture Prototypes
- **C.2** Web Configurator Prototypes
- **D** Code Snippets

# Contents of the enclosed CD

#### Thesis

- LATEX Document
- PDF File

#### **Presentations**

- Initial presentation
- Final presentation

#### **Activity Sculpture Web Configurator**

- Prototype sketches
- Source code
- Gitlab and Github mirrors
- Instructions for deployment
- Login Data

# **Sculptures**

- Prototype sketches
- .stl 3D print ready example files

#### **User Study**

- Questionnaire
- Results
- Heat map images

# References