

# A Machine-Learning Based Approach for 2D Character Animation

<Subtitle>

## Bachelor Thesis

Bachelor Course on Creative Computing  
at St. Pölten University of Applied Sciences

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# Declaration

I assure that

- I have written this work independently, have not used other sources and aids than those indicated and have not made use of any other unauthorized assistance.

- I have not yet submitted this topic to an assessor in Austria or abroad for assessment or in any form as an examination paper.

- this work corresponds to the work assessed by the assessor.

Date: \_\_\_\_\_ Signature: \_\_\_\_\_

# **Abstract**

Introduction: Warum behandeln wir das Thema

Purpose: Welches Problem soll gelöst werden

Method: Wie wurde die Problemlösung gemacht

Product: Was war das Ergebnis

Conclusion: Was sind die Folgerungen / Schlussfolgerungen aus den gewonnen Erkenntnissen

keine Referenzen und Zitate

# Kurzfassung

Das Abstract auf deutsch.

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# 1 Example

!!! Please delete this chapter after finishing your work !!!

## 1.1 Settings

To add your name and the title of your work, please use the “Settings.tex” file! Additionally, switch there between German and English version.

## 1.2 How to Make Sections and Subsections

Use section and subsection commands to organize your document.  $\LaTeX$  handles all the formatting and numbering automatically. Use ref and label commands for cross-references.

### 1.2.1 How to Make Lists

You can make lists with automatic numbering ...

1. Like this,
2. and like this.

... or bullet points ...

- Like this,
- and like this.

... or with words and descriptions ...

**Word** Definition

**Concept** Explanation

**Idea** Text

### **1.3 Section**

You have to write text between each headline.

### **1.4 Citation**

This part describes the three types of citations which are possible:

#### **1.5 Direct Citation**

The maximum for a direct citation is a 1/2 page.

Overview first, zoom and filter, then details-on-demand (Shneiderman 1996)

#### **1.6 Floating Text Citation**

Shneiderman (1996) defined the Visual Information Seeking Mantra as “Overview first, zoom and filter, then details-on-demand”.

#### **1.7 Indirect Citation**

Some text which summarizes a paper or a book chapter. This could take several lines. Find attached a citation of a website (Kaley 2018).



## 1.8 Figures

To place a figure use the following code example

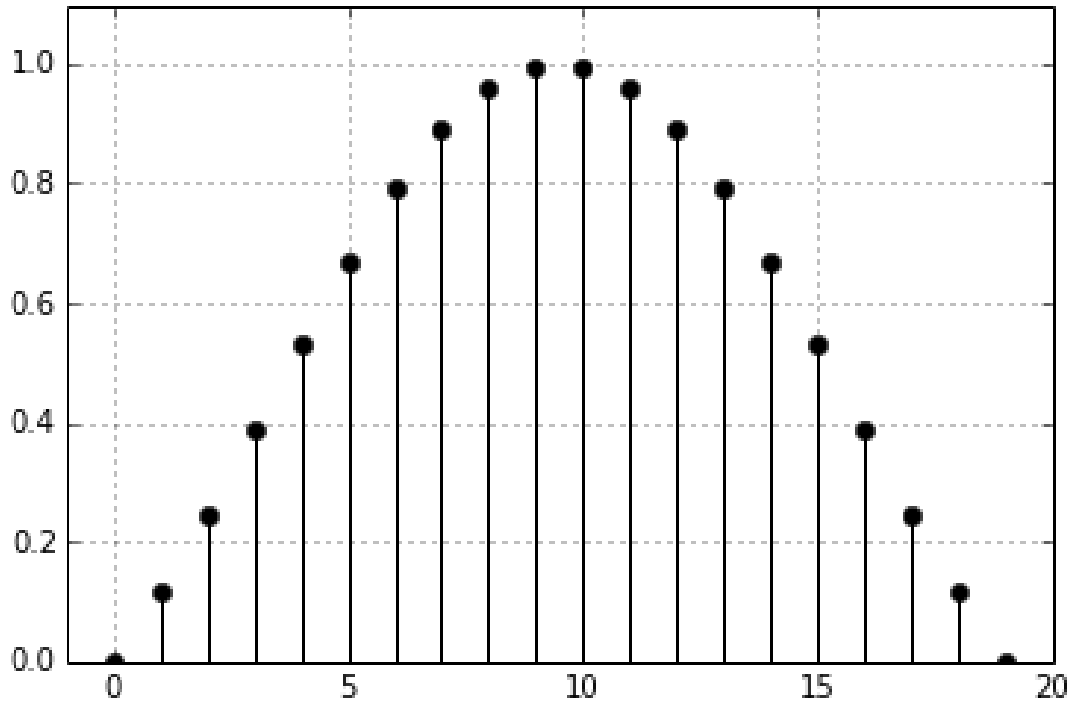


Figure 1.1. Interactive data exploration with multiple devices.

$$\int_{a,b}$$

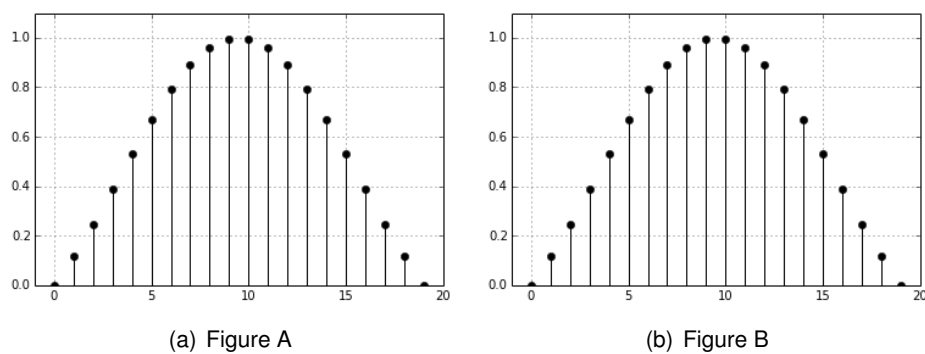


Figure 1.2. Wearables worn for experiments 1, 2, and 3.

Refer to a figure in the following forms:

If you take a look at Figure 1.1 ...

... text text (see Figure 1.1) ...

## 1.9 Listings

*Listing 1.1.* A bit of source code.

```
1 if( true == questions )
2 {
3     std::cout << "Let_me_google_it_for_you";
4 }
5 else
6 {
7     std::cout << "Great";
8 }
```

Now lets take a look at Listing 1.1.

## 1.10 Table

*Table 1.1.* My caption with a very useful description. die kann auch etwas länger sein und über mehrere Zeilen gehen und so weiter.

| Item      |             |            |
|-----------|-------------|------------|
| Animal    | Description | Price (\$) |
| Gnat      | per gram    | 13.65      |
|           | each        | 0.01       |
| Gnu       | stuffed     | 92.50      |
| Emu       | stuffed     | 33.33      |
| Armadillo | frozen      | 8.99       |

For the fast generation of tables from Excel use <http://www.heise.de/download/excel2latex.html>

## 1.11 Equations

$\text{\LaTeX}$  is great at typesetting equations. Let  $X_1, X_2, \dots, X_n$  be a sequence of independent and identically distributed random variables with  $E[X_i] = \mu$  and  $\text{Var}[X_i] = \sigma^2 < \infty$ , and let

$$S_n = \frac{X_1 + X_2 + \dots + X_n}{n}$$

This was a equation without a label.

$$S_n = \frac{1}{n} \sum_i^n X_i \tag{1.1}$$

This is the reference to equation 1.1.

denote their mean. Then as  $n$  approaches infinity, the random variables  $\sqrt{n}(S_n - \mu)$  converge in distribution to a normal  $\mathcal{N}(0, \sigma^2)$ .

## **2 Introduction / Einleitung**

Führt in die Thematik, Problem- und Aufgabenstellung ein

Vorstellung der Forschungsfrage

Enthält Grundlagenwissen

Gibt Überblick über die Arbeit

Darstellung der Related Work - sofern bereits ähnliche Arbeiten zu diesem Themengebiet existieren; In aller Kürze: Was gibt es? Was sind die Ergebnisse? Ist etwas offen geblieben? Fehlt etwas?

### **3 Method / Methode**

Wie wurde Literatur gefunden?

Welche Journals, Conferences, Libraries, Search engines. . . wurden genutzt?

Nach welchen Keywords wurde gesucht, wie viele Treffer gab es?

Nach welchen Kriterien wurde selektiert und warum?

## **4 Results / Ergebnisse**

Presenting found literature in a useful way

### **4.1 First Section**

Ich bin Text, Text, Text<sup>1</sup>

#### **4.1.1 First Subsection**

---

<sup>1</sup><http://mfg.fhstp.ac.at>

## **5 Discussion / Diskussion**

Comparison of presented technologies/methods/projects

Kritische Diskussion / Vergleich der Ansätze

Welche Methoden werden zumeist genutzt, warum?

Überblick / Zusammenfassung der gefundenen Literatur in einer sinnvollen Kategorisierung  
/ Charakterisierung

## **6 Conclusion / Fazit**

Was kann man daraus lernen?

Was fehlt?

Ideen für zukünftige Forschung



# Bibliography

- Kaley, A. (2018). *Match Between System and Real World: 2nd Usability Heuristic Explained*. Retrieved March 24, 2019, from <https://www.nngroup.com/articles/match-system-real-world/>
- Shneiderman, B. (1996). The eyes have it: A task by data type taxonomy for information visualizations. *IEEE Symposium on Visual Languages, 1996. Proceedings*, 336–343. <https://doi.org/10.1109/VL.1996.545307>

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# Listings

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# Appendices

## A Appendix

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## B Appendix

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