

FACHHOCHSCHULE LUZERN HSLU

STUDIENGANG DIGITAL IDEATION, BACHELOR
4. SEMESTER

TBD

Simon Hischier

April 30, 2018

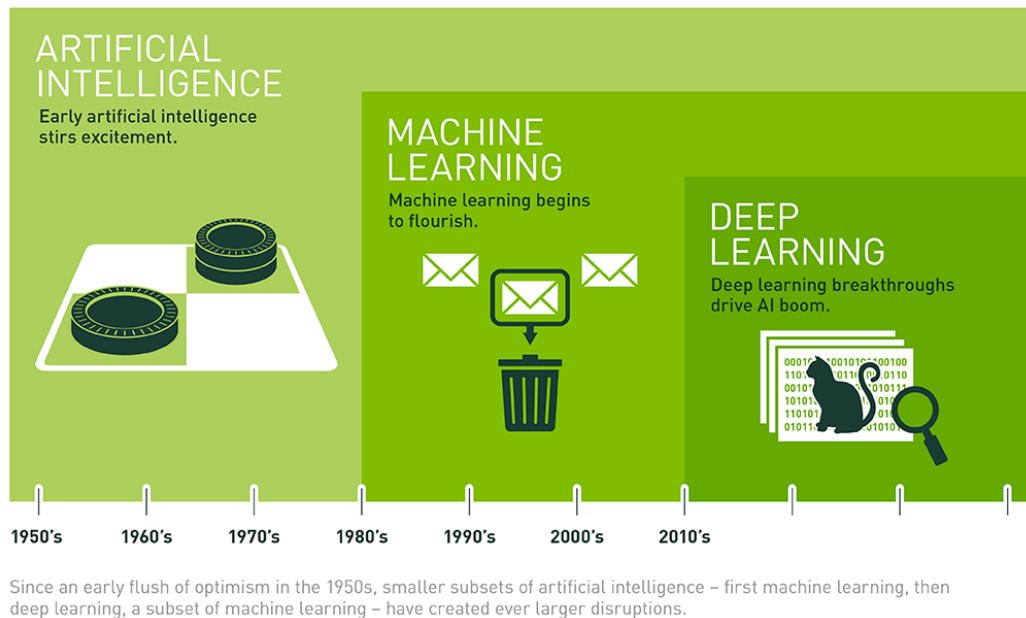
Inhalt

1	Abstract	2
2	AI, Machinelearning, Deeplearning	2
3	Recurrent Neural Networks	2
4	Long short-term memory	2
5	TensorFlow.js	3
6	Challenges	3
7	Goal	3
8	examples	3
9	Examples	4
10	Examples of Images	4
11	Script code	5
12	Tables etc.	6
13	Referenzen und Akronyme	6

1 Abstract

2 AI, Machinelearning, Deeplearning

blibla [1] TODO: research definitions



§

Figure 1: Levels of AI as Image. [1]

3 Recurrent Neural Networks

As explained in [section 2 Machine Learning](#) (ML) is a broad term and includes a variety of models. The [Recurrent Neural Networks \(RNN\)](#) are networks for tasks where we need some kind of persistence. If we want to classify videoframes the network should have some kind of consistency.[2] A network should persist the last seen data and not reclassify items every frame. Reclassifying without previous context could lead to different recognitions in every frame for the same object.

4 Long short-term memory

[RNN](#) are good for persisting very recent information. Sentences are a great example: "Ships are built to float on *water*". The [RNN](#) is great in filling the end of this sentence. Problems arise when the information is needed a lot later. The more information is inbetween the contextual references the more unreliable a basic [RNN](#) gets. Books for example can have references on the last page to

the very beginning. For such tasks a [Long short-term memory \(LSTM\)](#) model is the perfect fit. The [LSTM](#) network was introduced by Hochreiter Sepp and Uergen Schmidhuber[3]. A [LSTM](#) is a specialized version of a [RNN](#) which is designed for these kind of tasks. Almost all [RNN](#) tasks can be achieved with a [LSTM RNN](#) [2]. to read: https://en.wikipedia.org/wiki/Long_short-term_memory <https://colah.github.io/posts/2015-08-Understanding-LSTMs/>

5 TensorFlow.js

As of April 2018 Google released a new JavaScript [ML](#) library called [Tensorflow.js](#). [Tensorflow.js](#) is build on deeplearn.js and can be used for a broad variety of [ML](#) tasks. The library allows to train and run models in the webbrowser. Models can be pre-trained on a server or offline computer and then be used on the website.

6 Challenges

various challenges:

- level is playable
- Levels getting harder
- build up, learn new thing and then master it

7 Goal

The goal of this work is to generate maps for games. Maps from "Super Mario" or "Super Meat Boy" contain mostly solid or empty blocks. With that knowledge, the levels can probably be represented in an easy to read text format instead of an image format. The text can probably be feed into an [ML](#) system and new maps can be generated with the assistance of a [ML](#) model.

8 examples

We can Cite [4], [5], [6], [7], [8], [4] etc. If we want to have terms and shortcuts we can introduce them once: [Long Glossary Entry](#) and [Open Source Software \(OSS\)](#). If we refer to [Long Glossary Entry](#) and [OSS](#) later it will only use the short version.

9 Examples

10 Examples of Images

Images are possible aswell:

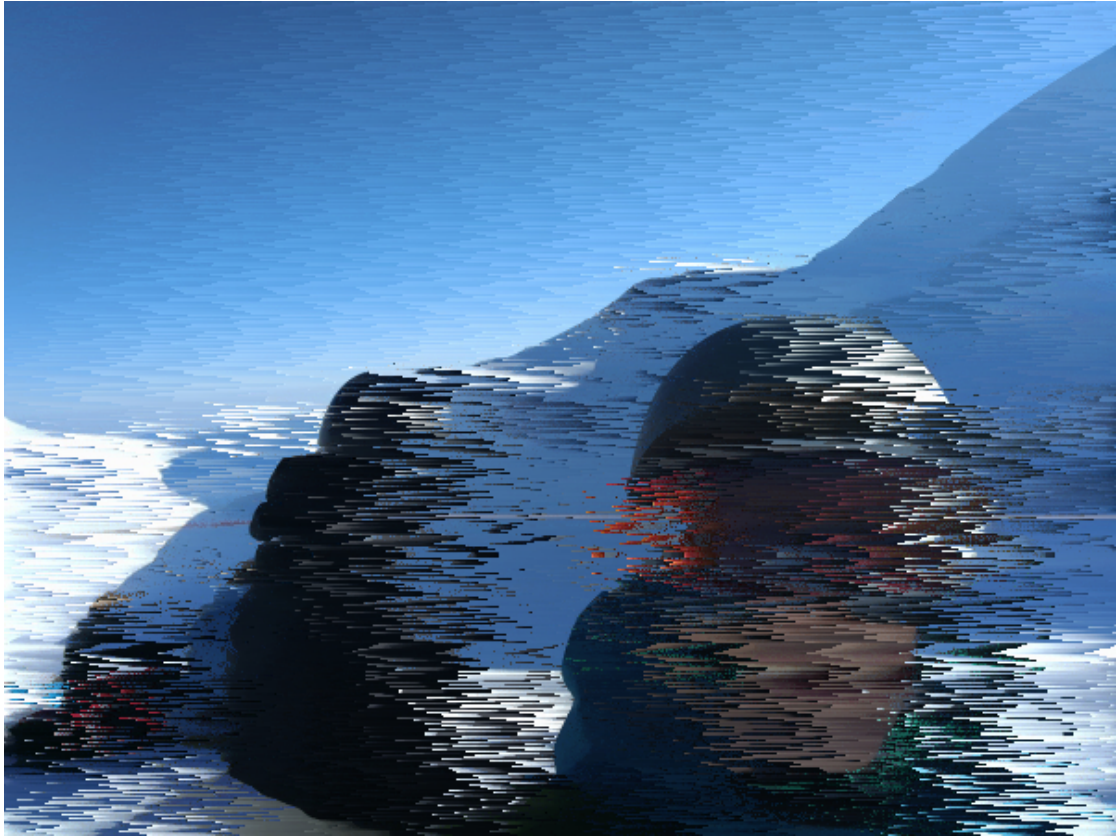


Figure 2: Thats me. Source: <https://thecell.eu/>

and even multiple images are possible

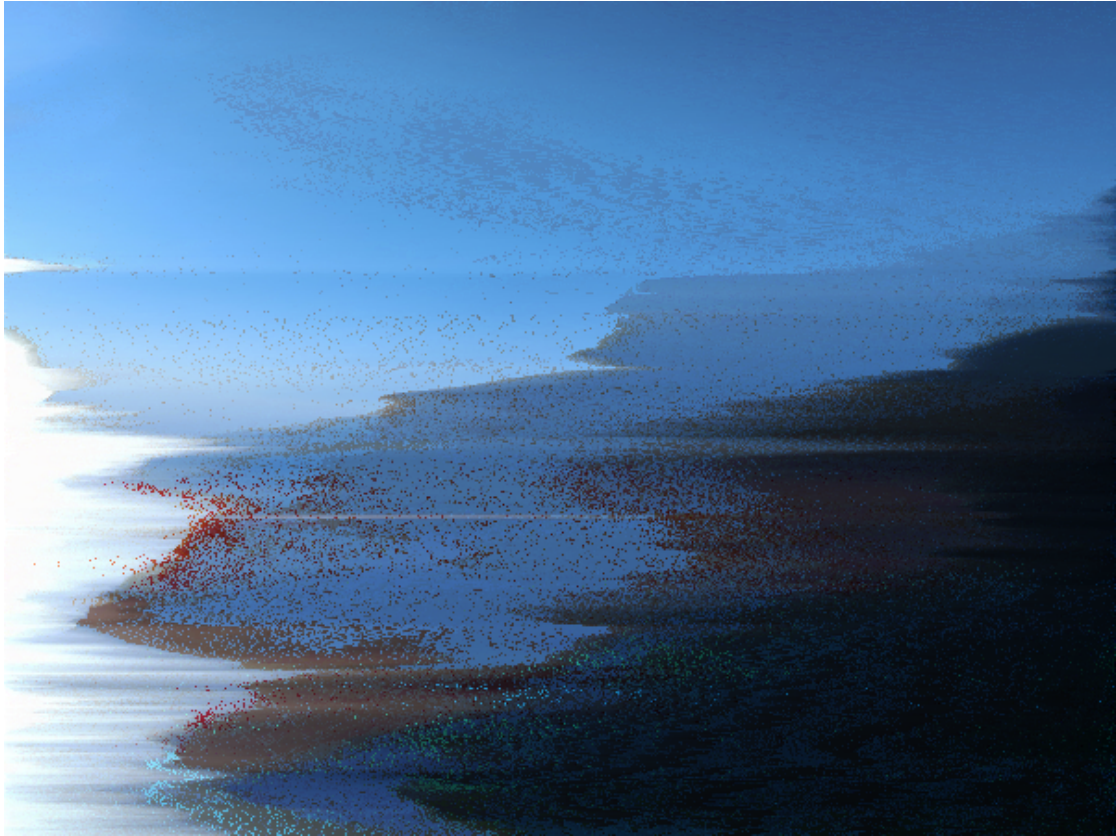
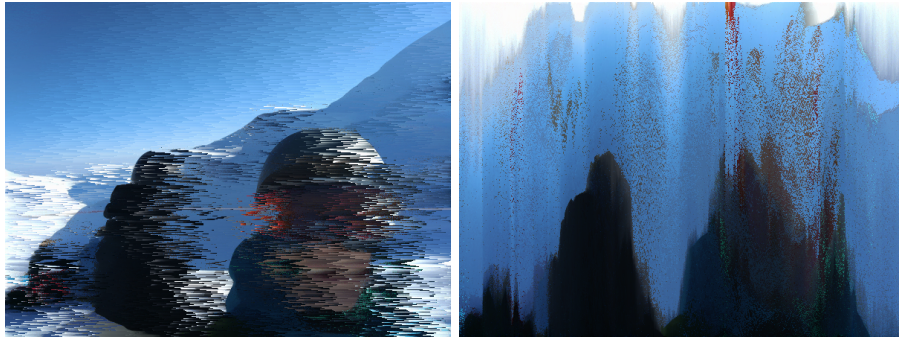


Figure 3: multiple images as an example

Figure 4: if needed to reference separate it's possible like this

11 Script code

A simple codeblock is possible take a look at this:

```
<script>
let aVar = "this is a JavaScript variable";
console.log(aVar);
</script>
```

12 Tables etc.

Lists can be made as following:

- List an item once
- or twice
- just add more if needed
- sublists are possible aswell:
 - List an item once
 - or twice
 - just add more if needed

If you are looking for tables, here it is:

	1	2	3	4	5	6
Dota 2	31 min	H	++	Z	<40\$	Kosmetisch
PoE	∞	H	++	Z	<\$440	Shoppunkte
The Witcher 3	48.5h	H & C		Z	\$24	AddOn

Table 1: Statistik Spiellänge wurde erfasst von <https://howlongtobeat.com> und <http://steamspy.com/>.

13 Referenzen und Akronyme

Glossary

Long Glossary Entry Here is the description of a long entry [3](#)

Tensorflow.js The Tensorflow software released as a JavaScript library for websites and web-applications [3](#)

Acronyms

LSTM Long short-term memory. [3](#)

ML Machine Learning. [2](#), [3](#)

OSS Open Source Software. [3](#)

RNN Recurrent Neural Networks. [2](#), [3](#)

References

- [1] Michael Copeland. The Difference Between AI, Machine Learning, and Deep Learning? — NVIDIA Blog, 2016.
- [2] Christopher Olah. Understanding LSTM Networks, 2015.
- [3] Sepp Hochreiter and Jj Urgan Schmidhuber. LONG SHORT-TERM MEMORY. *Neural Computation*, 9(8):1735–1780, 1997.
- [4] Wikipedia. Scripting language, 2014.
- [5] Netta Iivari, Henrik Hedberg, and Tanja Kirves. *Usability in Company Open Source Software Context - Initial Findings from an Empirical Case Study*, pages 359–365. Springer US, Boston, MA, 2008.
- [6] Mohammad AlMarzouq, Li Zheng, Guang Rong, and Varun Grover. Open source: Concepts, benefits, and challenges. *Communications of the Association for Information Systems*, 16(1):37, 2005.
- [7] Heise Online. Aus für LiMux münchen stadtrat sagt zum pinguin leise servus, 2017.
- [8] Nikos Viorres, Papadopoulos Xenofon, Modestos Stavrakis, Evangelos Vlachogiannis, Panayiotis Koutsabasis, and John Darzentas. Major hci challenges for open source software adoption and development. In *International Conference on Online Communities and Social Computing*, pages 455–464. Springer, 2007.

List of Figures

1	Levels of AI as Image. [1]	2
2	Thats me. Source: https://thecell.eu/	4
3	multiple images as an example	5
4	if needed to reference separate it's possible like this	5

List of Tables

1	Statistik Spiellänge wurde erfasst von https://howlongtobeat.com und http://steampy.com/	6
---	--	---