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RapidMiner

From Wikipedia, the free encyclopedia

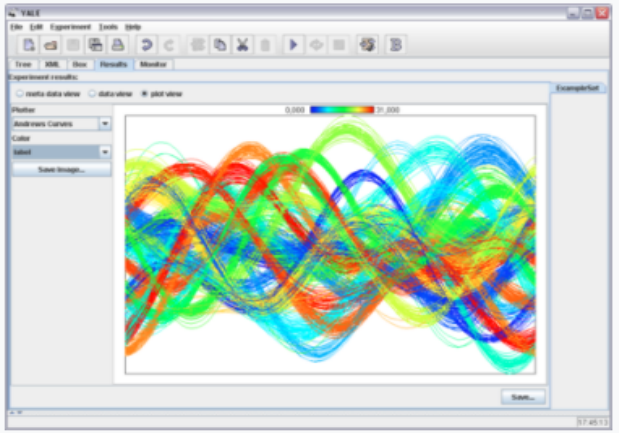
RapidMiner is a data science software platform developed by the company of the same name that provides an integrated environment for data preparation, machine learning, deep learning, text mining, and predictive analytics. It is used for business and commercial applications as well as for research, education, training, rapid prototyping, and application development and supports all steps of the machine learning process including data preparation, results visualization, model validation and optimization.[1] RapidMiner is developed on an open core model.

Contents [hide]

History [edit]

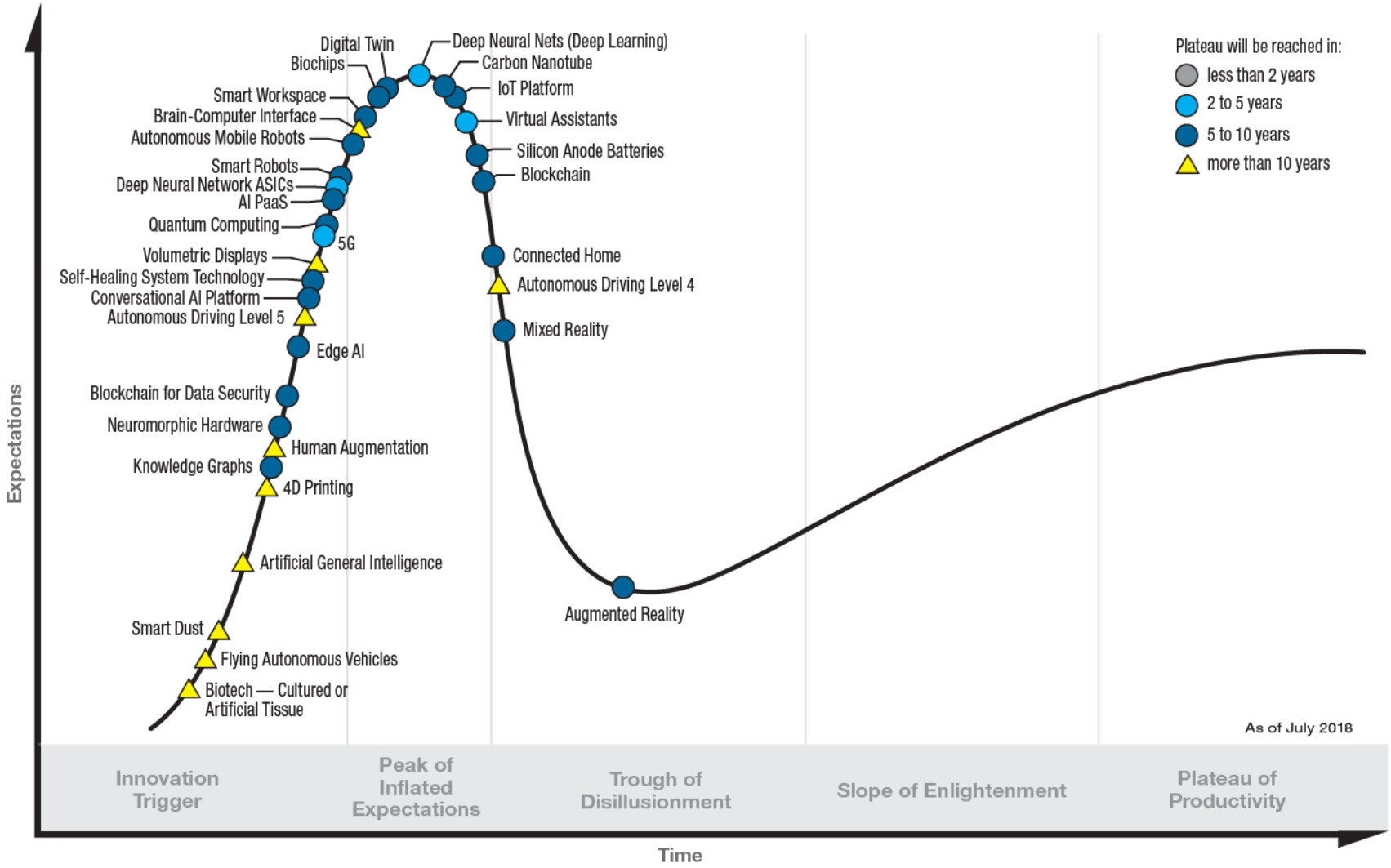
RapidMiner, formerly known as YALE (Yet Another Learning Environment), was developed starting in 2001 by Ralf Klinkenberg, Ingo Mierswa, and Simon Fischer at the Artificial Intelligence Unit of

RapidMiner



Developer(s)	RapidMiner
Initial release	2006; 14 years ago
Stable release	9.6 / 2 March 2020; 7 months ago
Operating system	Cross-platform
Type	Data science, machine learning, predictive analytics
License	Professional and Enterprise Editions are Proprietary; Free Edition (10,000 rows and 1 logical processor limit) is available as AGPL
Website	rapidminer.com

Hype Cycle for Emerging Technologies, 2018



gartner.com/SmarterWithGartner

Source: Gartner (August 2018)

Gartner

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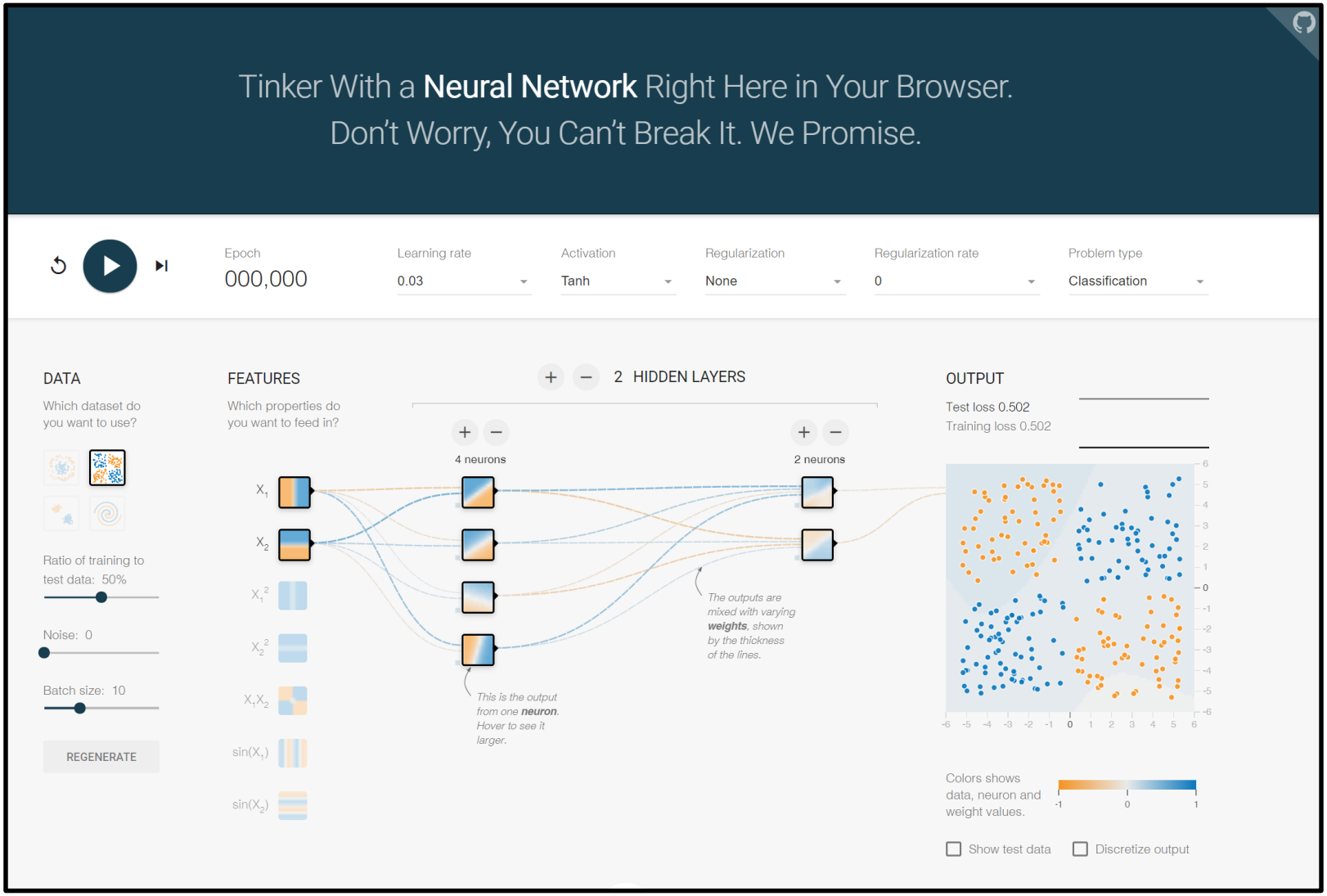
(3) **TensorFlow Playground**



playground.tensorflow.org

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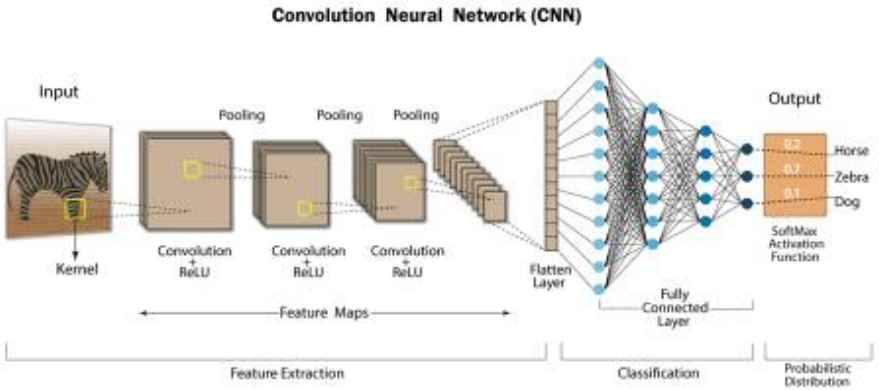
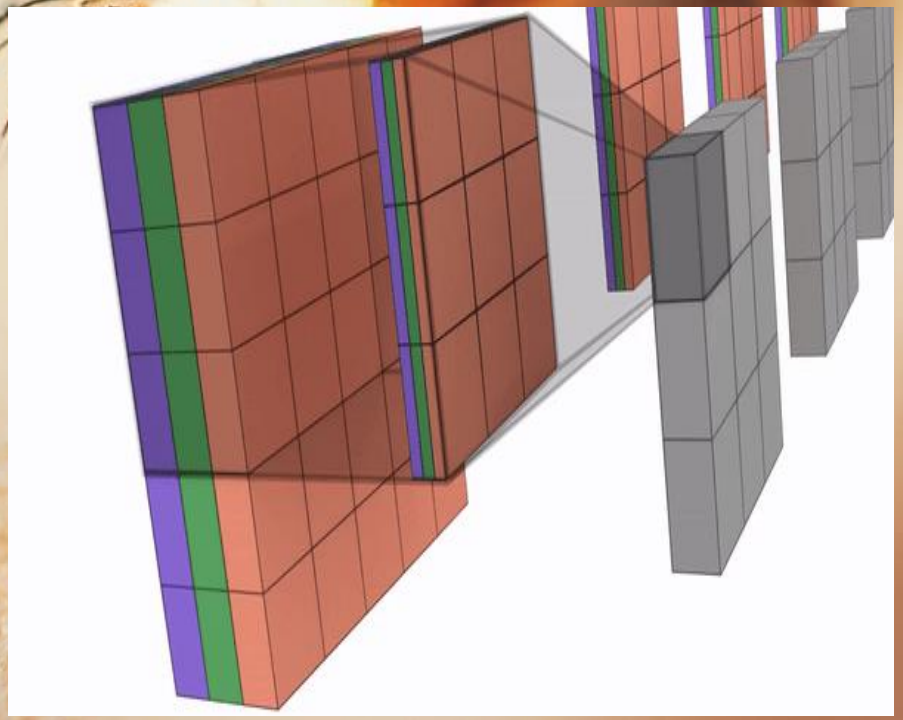
(4) Basics of **Convolutional Neural Networks (CNN)**

CNN: Grundstruktur am Beispiel





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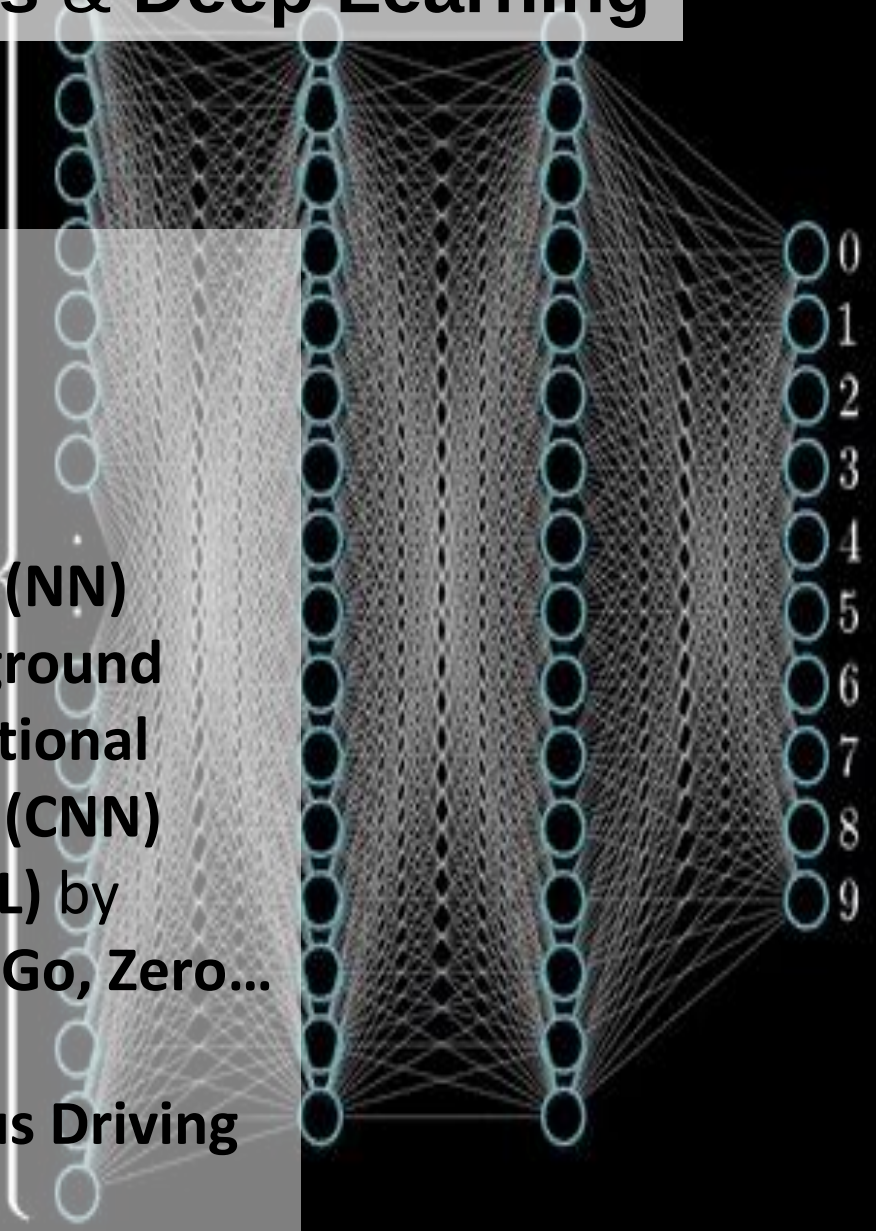

Content:

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2. Basics of **Neural Networks (NN)**
3. **TensorFlow Playground**
4. Basics of **Convolutional Neural Networks (CNN)**
5. **Deep Learning (DL)** by **Deepmind: AlphaGo, Zero…**
6. **Deep NN** in **Tesla Autonomous Driving**
7. **Summary**

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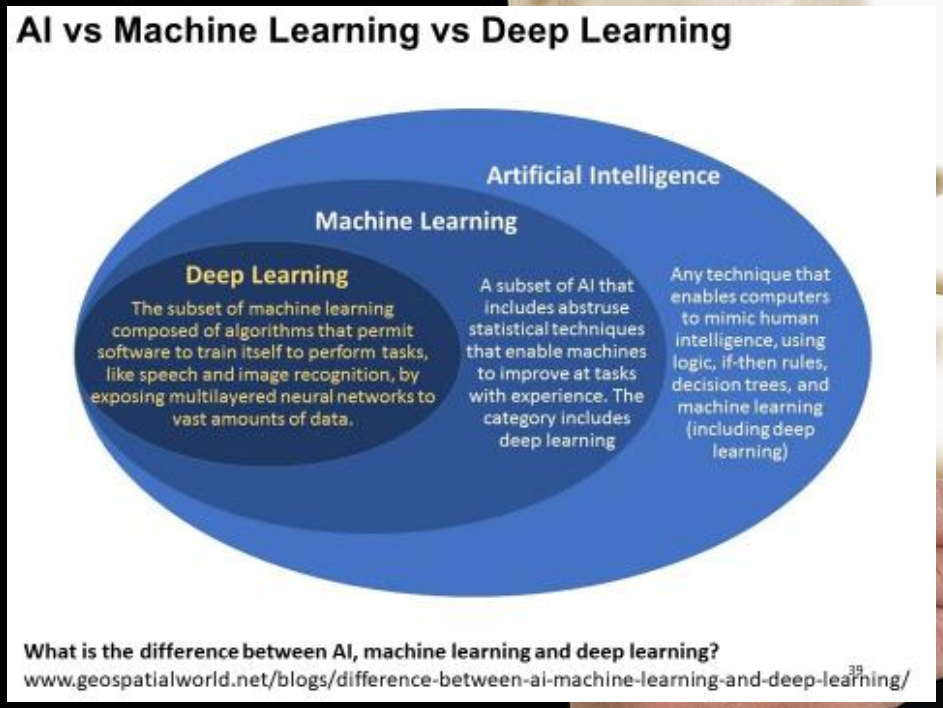
(1) **Motivation** & Intro **Machine Learning**



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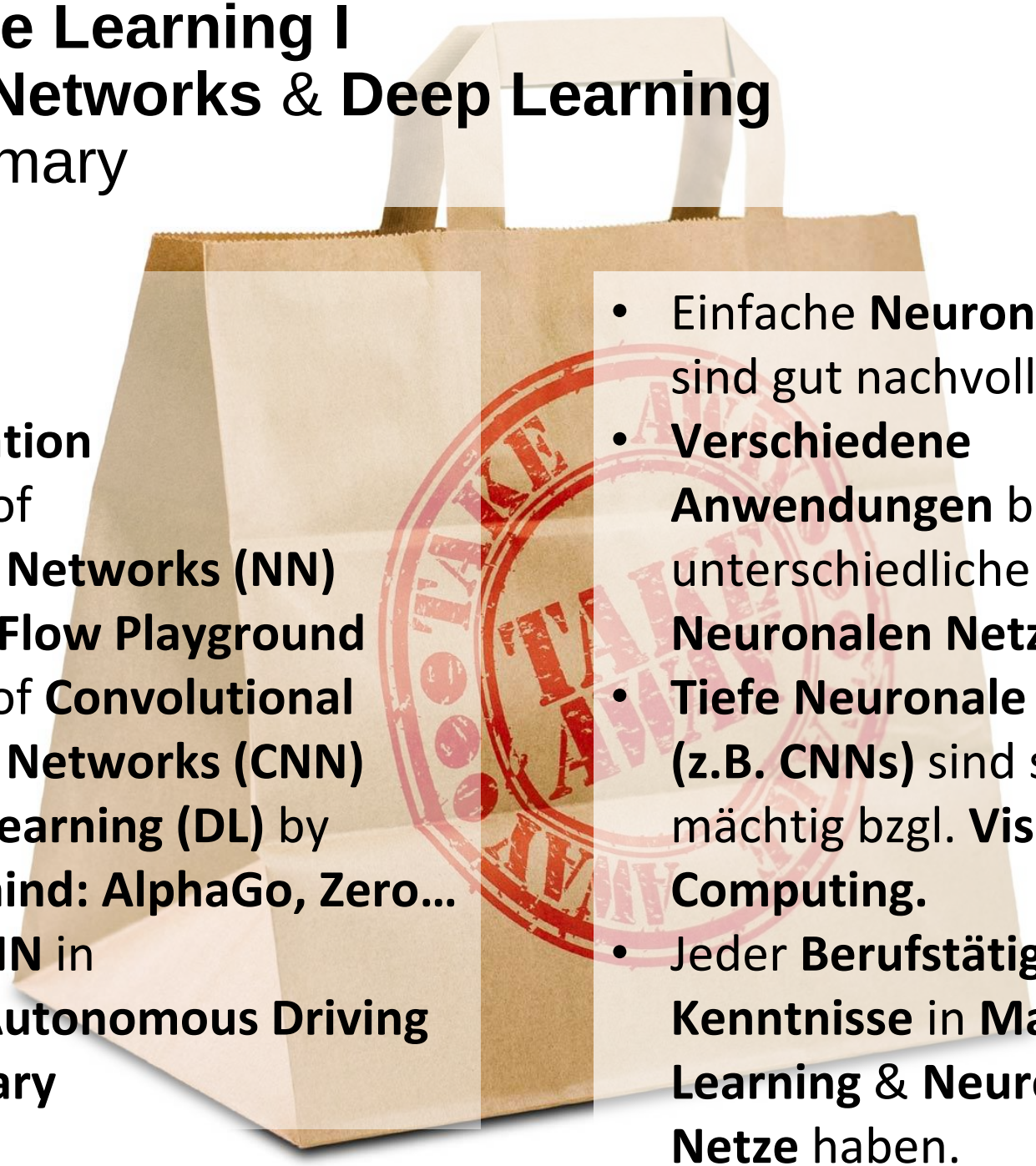
(7) Summary



Content:

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7. **Summary**

- Einfache **Neuronale Netze** sind gut nachvollziehbar.
- **Verschiedene Anwendungen** benötigen unterschiedliche **Neuronalen Netze**.
- **Tiefe Neuronale Netze (z.B. CNNs)** sind sehr mächtig bzgl. **Visual Computing.**
- Jeder **Berufstätige** sollte **Kenntnisse** in **Machine Learning** & **Neuronale Netze** haben.

8 Machine Learning I

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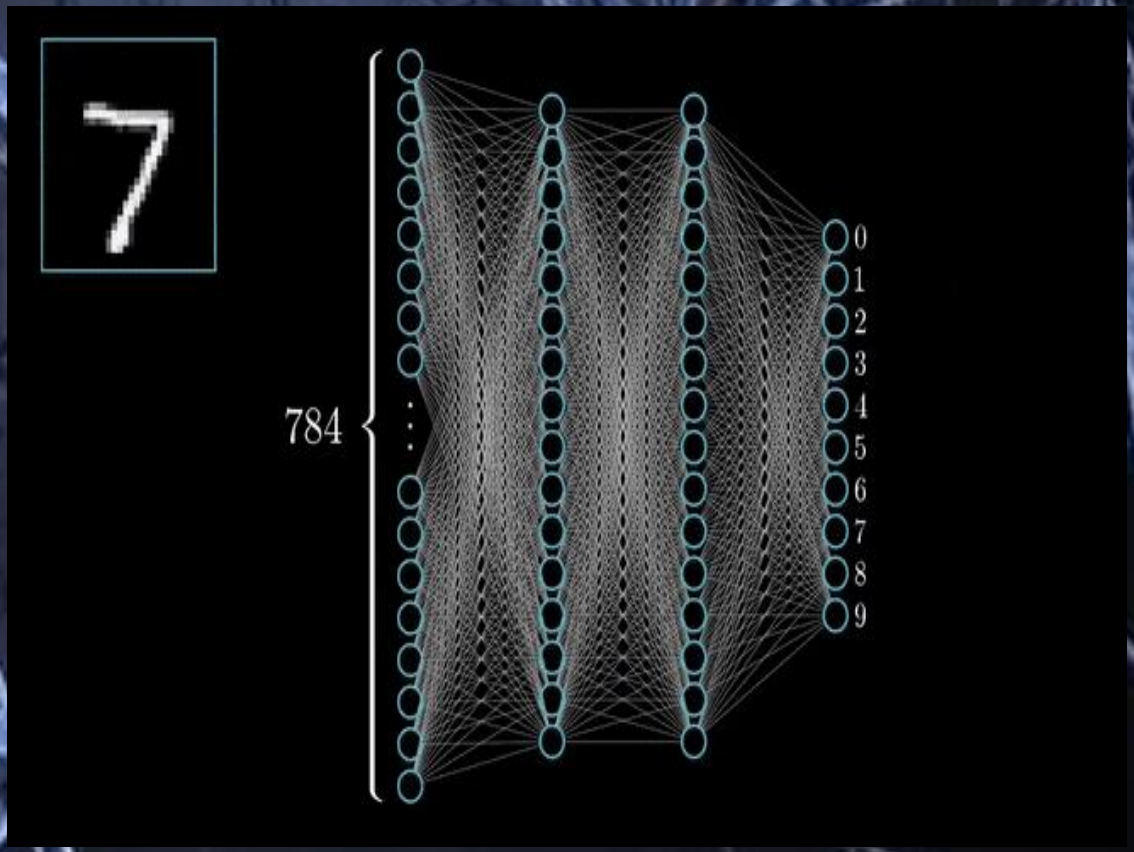
(2) **Basics of Neural Networks (NN)**



Michael Amberg

Todays Content:

1. **Motivation**
2. Basics of **Neural Networks (NN)**
3. **TensorFlow Playground**
4. Basics of **Convolutional Neural Networks (CNN)**
5. **Deep Learning (DL)** by **Deepmind: AlphaGo, Zero…**
6. **Deep NN** in **Tesla Autonomous Driving**
7. **Summary**

Artificial Intelligence (AI)
The **theory** and **development** of **computer systems able** to **perform tasks normally requiring human intelligence**, such as visual perception, speech recognition, decision-making, and translation between languages.

Machine Learning (ML)
The **use** and **development** of **computer systems** that can **learn** and **adapt without following explicit instructions**, by **using algorithms** and **statistical models** to **analyze** and **draw inferences from patterns in data**.

Neural Networks (NN)
Use a **network of functions** to **understand** and **translate** a **data input** of **one form into** a **desired output.** Neural Networks are one **approach to machine learning** that **learn a representation by themselves** and can **vary in depth**.

Deep Learning (DL)
A **subset of machine learning based on neural networks** in which **multiple layers** of processing are used to **extract progressively higher-level features** from **data**. Without neural networks, there would be no deep learning. But deep learning may comprise other techniques from machine learning.

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Deep learning

From Wikipedia, the free encyclopedia

Deep learning (also known as **deep structured learning**) is part of a broader family of machine learning methods based on artificial neural networks with representation learning. Learning can be supervised, semi-supervised or unsupervised.[1][2][3]

Deep-learning architectures such as deep neural networks, deep belief networks, recurrent neural networks and convolutional neural networks have been applied to fields including computer vision, machine vision, speech recognition, natural language processing, audio recognition, social network filtering, machine translation, bioinformatics, drug design, medical image analysis, material inspection and board game programs, where they have produced results comparable to and in some cases surpassing human expert performance.[4][5][6]

Artificial neural networks (ANNs) were inspired by information processing and distributed communication nodes in biological systems. ANNs have various differences from biological brains. Specifically, neural networks tend to be static and symbolic, while the biological brain of most living organisms is dynamic (plastic) and analog.[7][8][9]

The adjective "deep" in deep learning comes from the use of multiple layers in the network. Early work showed that a linear perceptron cannot be a universal classifier, and then that a network with a nonpolynomial activation function with one hidden layer of unbounded width can on the other hand so be. Deep learning is a modern variation which is concerned with an unbounded number of layers of bounded size, which permits practical application and optimized implementation, while retaining theoretical universality under mild conditions. In deep learning the layers are also permitted to be heterogeneous and to deviate widely from biologically informed connectionist models, for the sake of efficiency, trainability and understandability, whence the "structured" part.

Part of a series on
Machine learning and data mining

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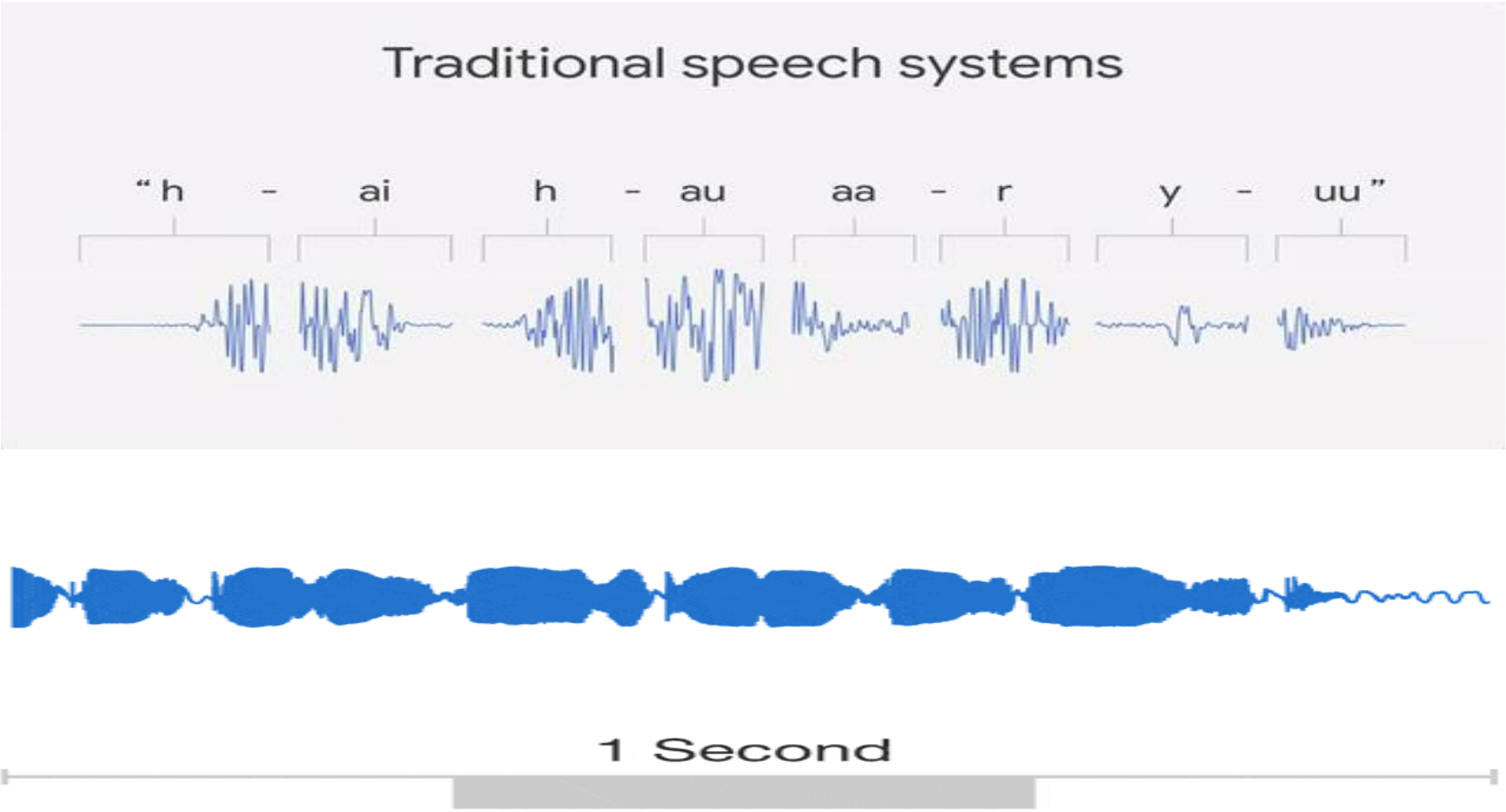
Google WaveNet



WaveNet is a powerful **predictive technique** that uses multiple Deep Learning (DL) strategies from Computer Vision (CV) and Audio Signal Processing models and applies them to **longitudinal (time-series) data**.

Google WaveNet: A generative model for raw audio, 2016
deepmind.com/blog/article/wavenet-generative-model-raw-audio