# Deep Learning Architectures

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## I. Abstract

Irgendein Abstract... zusammenfassend vll.

## II. Einleitung

Neural networks experienced a steep rise in popularity over the last years. One reason for this trend is the versatility of these networks. They are being deployed in many domains such as computer vision and pattern recognition, predictions, robotics and self-driving cars and many more.
However, quite few scientific papers of neural networks are released in the financial domain and even fewer with the objective to predict the development of stock prices. The task of stock course prediction is difficult as the stock prices are influenced by a multitude of seemingly unpredictable and uncorrelated factors. Nevertheless, the development of a stock course depends strongly on the actions of traders. Those traders could use the search engine google to gather information about stocks they are interested in right before a trade. The service *Google Trends* views various graphs displaying data of search terms typed in by users at the google search engine. This service is accessible by the public. Based on these thoughts the following hypothesis can be formulated: *A correlation between google trends search terms and stock courses exists.*
In this paper the previous hypothesis is being investigated. In order to check the existence of a correlation between goolge trends data and stock courses, a neural network will be implemented and verified.

## III. Related Work

In **?** the author tries to train a neural network to predict the price of various stocks.

## IV. Implementation

- short description of the following subsections
- selection of the framework: tensorflow ('native')
- implementation results can be found at repo-link
- ...

### A. Collecting data

- first of all the necessary data needs to be collected:
  - google trends data for training
  - stock data for validation
- stock data was easy to collect
- google trends data, however, was a quite hard task

*1) Hacking Google Trends:*

- google trends has no api unlike many other google services
- therefore, an analysis of the request url was done to send prepared requests for data collection
- some additional problems like max. number of requests, request blockade etc.

### B. Preprocessing

- csv format
- zero centering
- ...

### C. Defining the model

- logical representation of the model

## V. Evaluation

- describe how the implementation is being evaluated
- execute the evaluation
- describe and interpret the results

## VI. Fazit und Ausblick

- summarize the results (implementation? evaluation results?)
- does it work? why? why not?
- how could the current solution be improved?
- possible further research?

## Literatur