AI, ML and Data Science - Introduction

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Two Shades of Artificial Intelligence

Is there a one-fits-all Artificial Intelligence approach?

- Artificial Intelligence (AI) promises to change the world.
- Data Scientists are one of the most sought-after group of experts.
- Data Science and (Statistical) AI is mainly a (re-)discovery of Machine Learning methods which were around for at least 20-30 years. Plain pattern matching.
- There are actually two contradictory types of AI problems:
  - Robotics, Industry 4.0 and Internet of Things (IoT), ...
  - Erratic structures like humans (customers, clients, employees, ...), financial markets and meteorological data, ...

Different mindset and approach required.

Having access to the world's best machine learning is like having access to 10 billion five-year-olds. If your task is "move that huge pile of bricks" than 10 billion kids are super helpful, but you can't ask them to "build the Taj Mahal".

Alex Stamos (ex-Facebook)

Feature Engineering

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Artificial Intelligence (AI) and Machine Learning (ML) utilize two rather simple and straightforward principles and methods:

- distance minimization (between customers, products, etc.), and
- (complex) dependency calculation between attributes.

It all boils down to a certain way of pattern matching which can be done successfully using AIaaS and MLaaS (e.g. Google, Amazon, Datarobot, ...)

These rather simple methods only unleash their magic if the attributes / features of the elements under consideration (e.g. customers, products, units, ...) are designed and aligned cleverly in relation to the specific use case, i.e. Data Based Management.

The process of defining and designing attributes is called Feature Engineering. It is mainly the task of augmenting existing data with information derived from the basic set of data or by linking external data sources: Data Curation.