Friedrich-Naumann-Stiftung f.d.F. –
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University of Zurich

An Institutional Perspective On The Regulation of AI-based Technology

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Why?

- AI applications start to spread in all areas quickly
  - E.g. credit scoring, insurance, e-commerce, educational evaluation, political campagains, medical diagnosis, operation of (stock) markets
- Expand their influence on human acting
- Common examples:
  - Google Search Algorithm
  - Facebook News Feed Algorithm

Examples

- Northpoint‘s Correctional Offender Mangagement Profiling for Alternative Sanctions (COMPAS)

  - Glenn Rodríguez
  - Loomis v. Wisconsin

Examples

- Facebook vs. sex workers
- Regulation of traffic speed
  - „It has to be driven at adequate speed“

Potential Risks

- Bias and social discrimination
- Manipulation (Why would you build an expansive algorithm if you can‘t bias it in your favor?)
- Surveillance
- Abuse of dominant market position (network effect)
- Reducing of Diversity
- Cognitive effects on human brain

What?

- Not (strong) AI, just weak AI
- Learning -> Learning algorithms

- Machine Learning:

  - Answer to the question:

  „How can we build computer systems that automatically improve with experience, and what are the fundamental laws that govern all learning processes?“ (Tom Mitchell, 2006)

What?

(Supervised Learning)

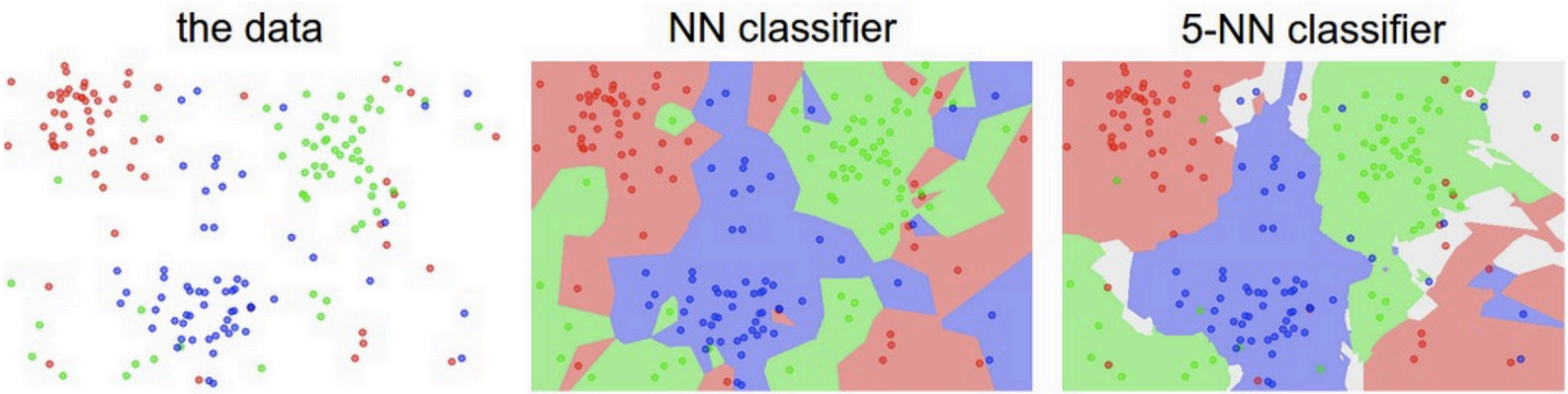
Input		Output
Data	→ Algorithm →	Result

VS.

Data + Result	→ „Learner" →	Algorithm, that turns Data into Result („classifier“)

Examples

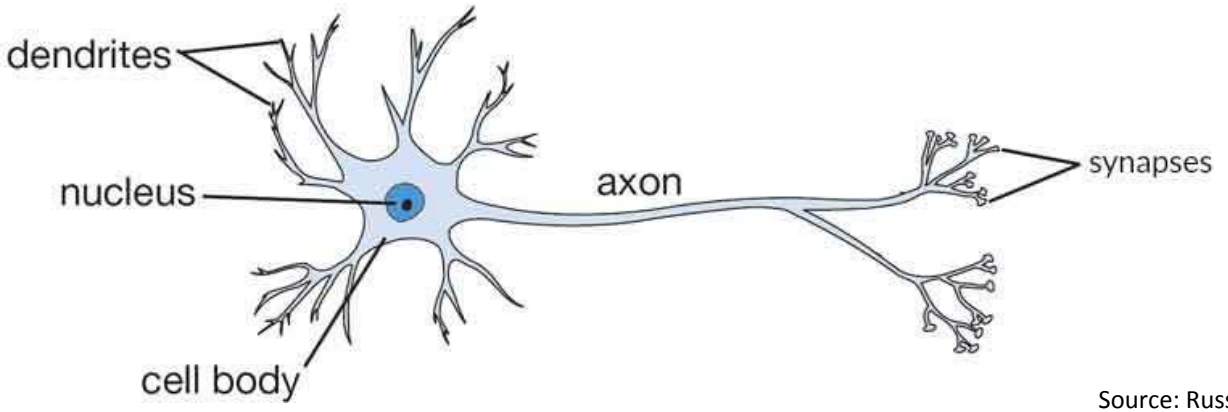
- Weighted k-nearest neighbor algorithm
  - ➢Recommender Systems (E-Commerce)



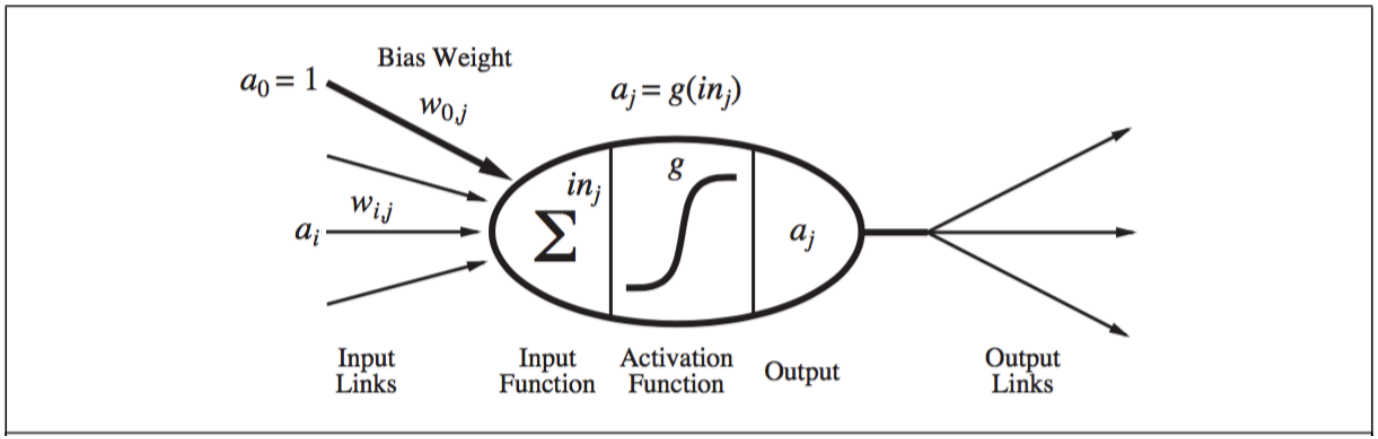
Source: https://cs231n.github.io/

Artificial Neural Networks

Biological Neuron



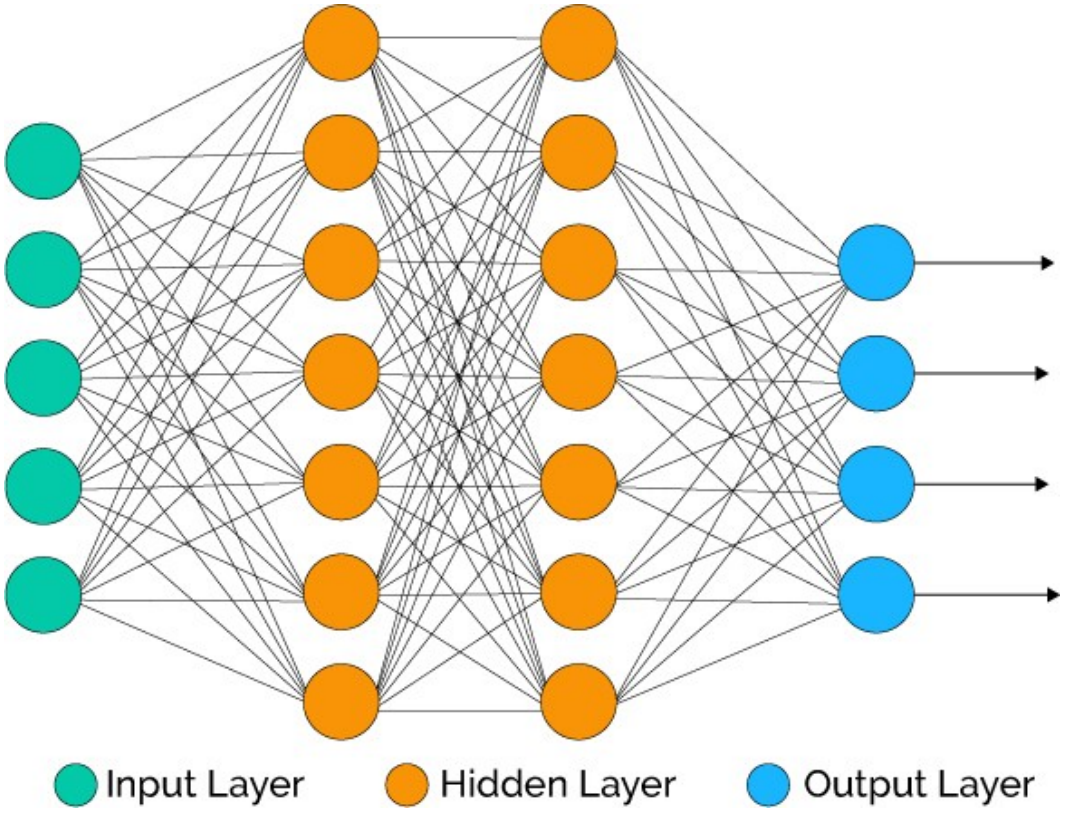
Source: Russel/Norvig (3rd. Ed.), p. 728



Source: https://cs231n.github.io/

Artificial Neural Networks

Multi Layer Perceptron



Source: https://cs231n.github.io/

How?

- Uniform approach possible?
  - Huge differences between „schools“ of Machine Learning

- General treating as a „black box“?
  - ➢ Just input and output control (black box auditing)?
    - » Empirical tests
      - Legal admissibility of Field Experiments (Scraping)
      - Obligation to provide an API

How?

- *Geisteswissenschaft*/Digital Humanities
  - Transperancy
    - » Disclosure of the source code (code auditing)
    - » „Qualified transparency“
      (technical, practical, legal, conceptual functionality)

- Law
  - Sectoral regulation
    - » Traditional approach
    - » German regulation of self-driving cars

How?

- Transfer from Political economy

- Idea: „Learners“ as institutions
  - ➢ Knowledge concerning institutions
    - » Determinants of „successful“ institutions?
    - » Design of „appropriate“ institutions?

- Assumptions for a „constitution“?

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