

Machine Learning

SUPERVISED LEARNING IN DATA ANALYSIS

Robotic Lab

Hochschule Rhein-Waal issued 11/11/19

Fields

Computer Vision

- How can computers understand digital images and video?
- Example: Facial recognition, object detection, object recognition, image generating, etc.

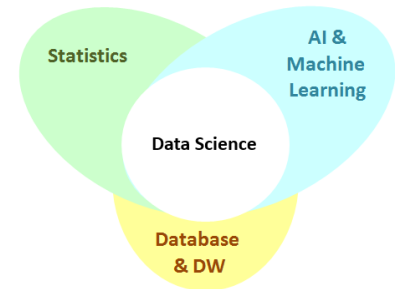
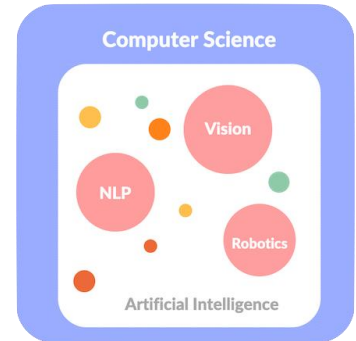
Natural Language Processing

- How can computer understand natural language data?
- Example: Virtual assistant, speed recognition, speed-to-text, etc.

Data Analysis

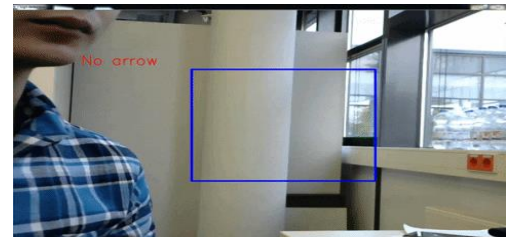
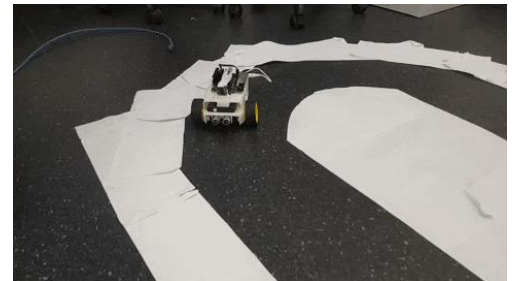
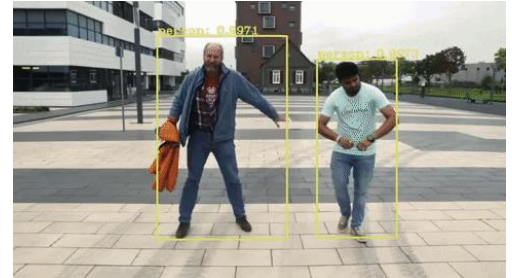
- How can computer understand and deliver prediction from raw data?
- Example: House price prediction,

Manufacturing / Medical / Logistic / Robotics, etc



AI in Robotic Lab

- Object detection and recognition
- Self-driving rover.
- Traffic-sign recognition.



Supervised learning algorithms

- Linear Regression
- Logistic Regression
- Support Vector Machines (SVMs)
- Decision Trees and Random Forest
- Neural Networks

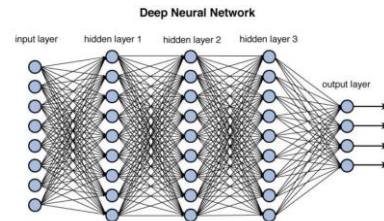
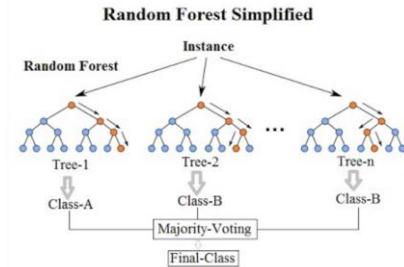
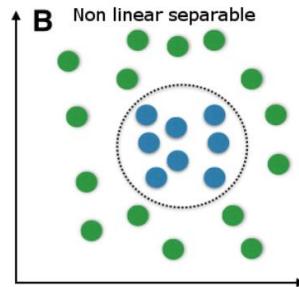
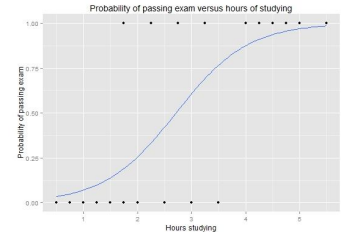
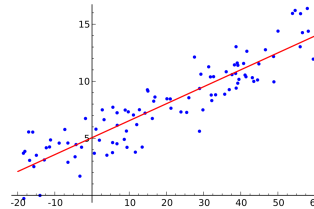
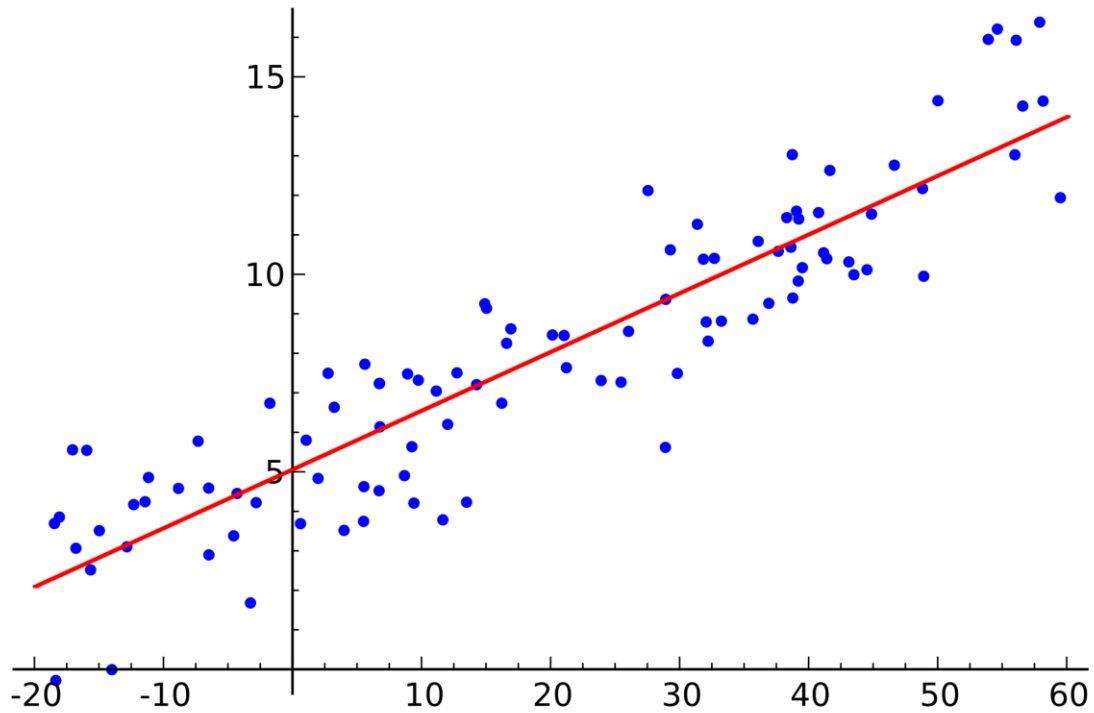
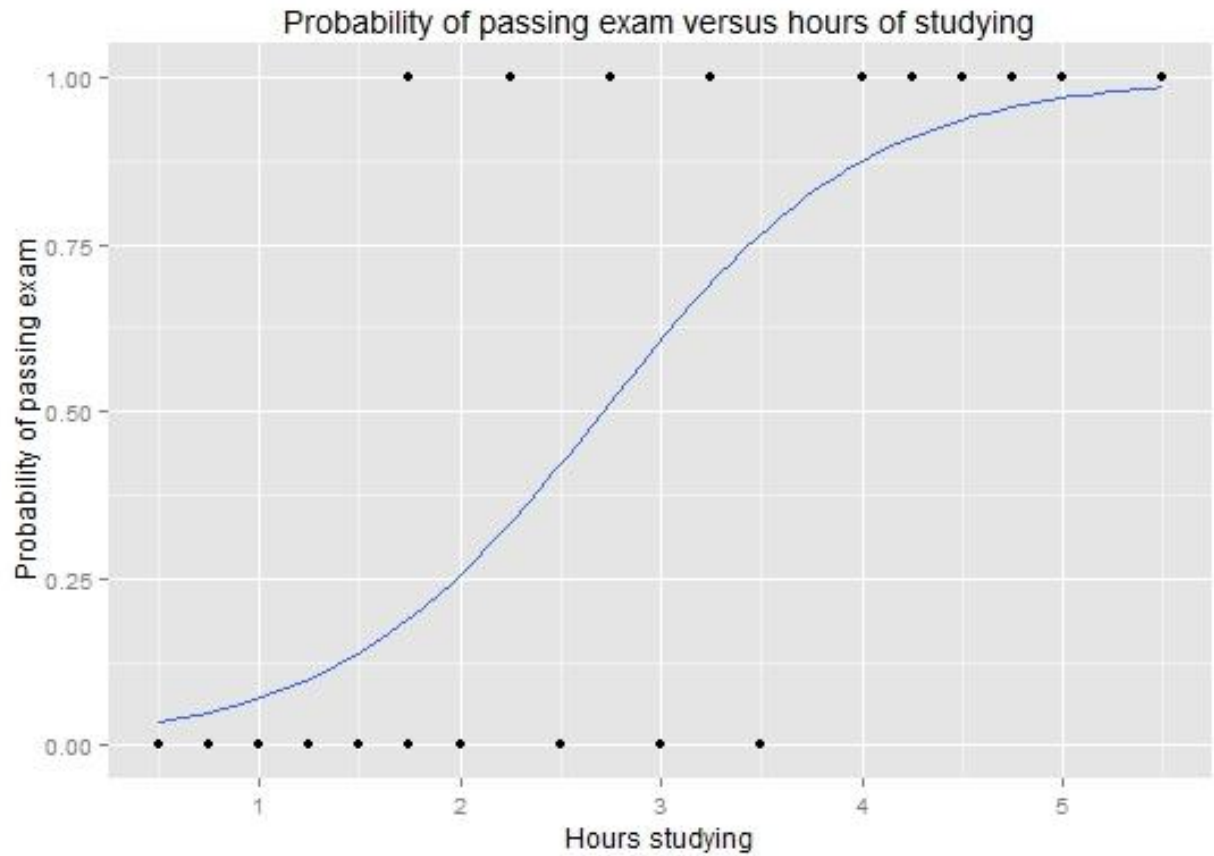


Figure 12.2 Deep network architecture with multiple layers.

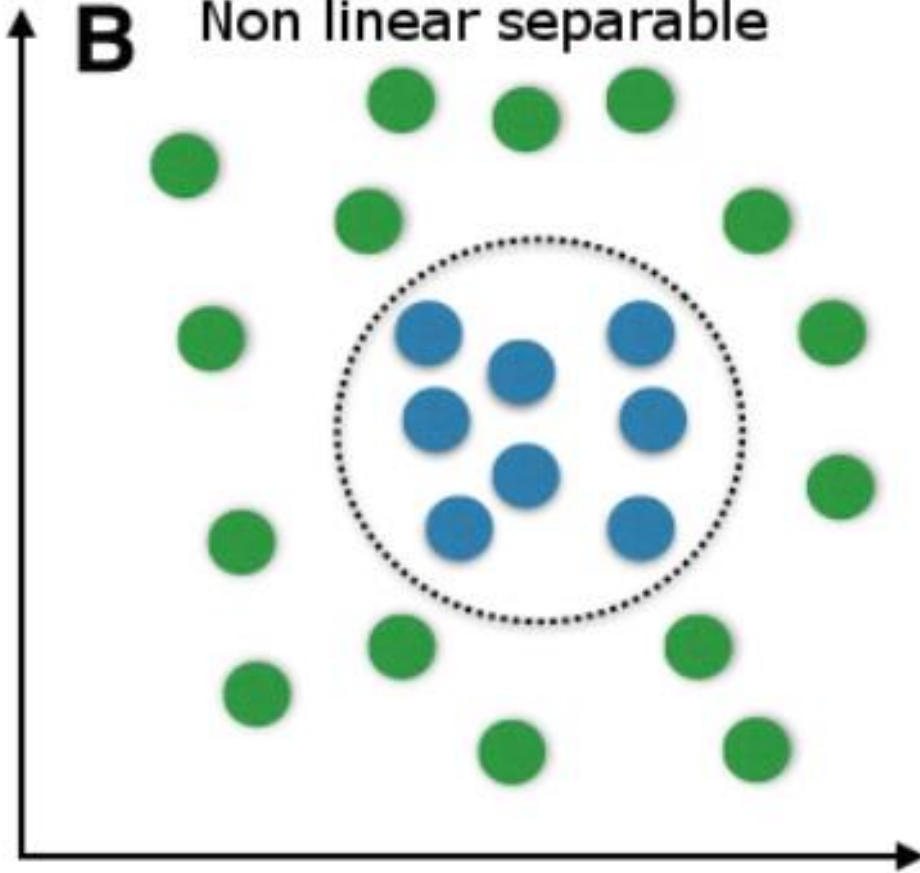
Approach to ML problem

1. Visualize and pre-process your dataset.
2. Select machine learning algorithm.
3. Create a model and train it.
4. Fine-tune your model.
5. Evaluate and test your model.





B Non linear separable



Deep Neural Network

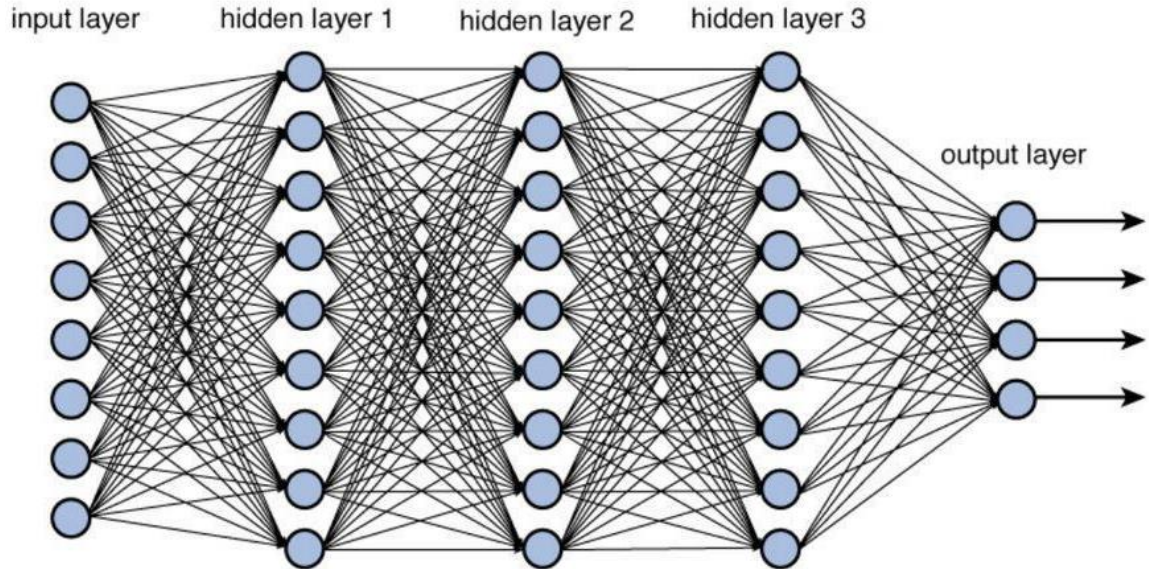


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