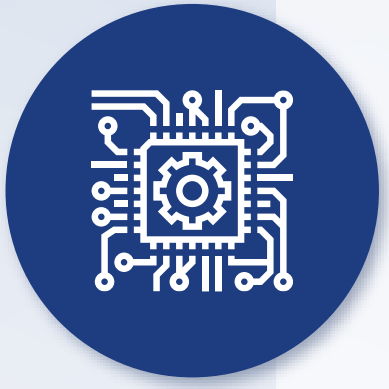
What is machine learning?

Machine Learning

- By making use of machine learning, machines can become more intelligent and optimize themselves. In a dynamic way.
- Without having to code all the intelligence upfront during the programming process
- We feed the machine with relevant data and relevant examples.
- The machine evaluates this data accordingly, recognizes patterns independently and learns from it.
- It applies what it has learned, learns again and refines its skills in an iterative way over time.

What is an algorithm?



Algorithms are specific mathematical procedures that consist of single steps that, when applied correctly, help to solve a specific problem and achieve a defined goal.

Rule-based vs. Machine learning algorithms

Rule-based algorithms

- The machine has to apply built-in rules as they were designed by humans during the programming process.
- We need to exactly explain to the computer right at the beginning:
  if this happens then do this;
  if that happens, act like that.

Static

Machine Learning algorithms

- The machine evaluates input and output data, recognizes patterns independently and learns from it in an iterative way over time.
- It learns to recognize the relation between input data (e.g. a picture) and output data (e.g. the labelling / naming of the picture)

Dynamic

Deep Learning

A sub-discipline of machine learning is referred to as **"Deep Learning"**:

Deep learning works with so-called neural networks that are similarly structured and work much like the neurons of the human brain.

Deep learning is more complex, but can also more powerful than conventional machine learning algorithms.

Deep learning algorithms require large amounts of consistent high quality data, computational power and large storage capacities.