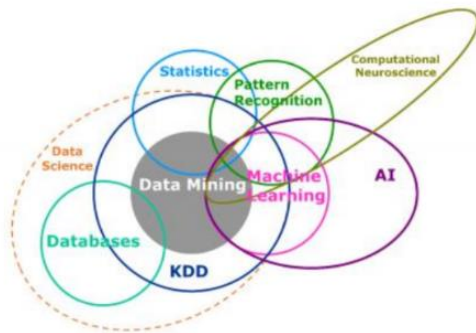


# MACHINE LEARNING IN DEMAND FORECASTING

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*The technology of artificial intelligence is one of the most important technological advances of our era and a fundamental driver of economic growth in our society. With this technology, a multitude of optimization potential within business processes can be found. However, is the fruit hanging as low as it would seem?*

Machine learning is a sub-area within artificial intelligence and the technology is used when detecting and identifying connections in data. Machine learning consists of a collection of algorithms that enables machines to perform various tasks and the algorithms have the capability to improve their performance without human interaction. This could be viewed as a learning process, but, of course, the algorithms don't have that actual cognitive ability to learn. It is simply a way of explaining the process of optimizing a set of model parameters numerically with the purpose of minimizing a cost function.



Machine learning is a complex technology and when implemented into business processes, it may imply exposing the business to new risks. For example, a human can easily explain and trace her thought of reasoning that derives a decision. However, a machine learning algorithm's decision are almost impossible to trace and

interpret. This phenomenon is often referred to as the black-box dilemma and raises the question of whether the results of a machine learning algorithm should be trusted or not. This is especially an important question to evaluate in highly regulated industries where it is crucial to maintain a transparency of the decisions made.

Another posed risk is related to the uncertainty in predictions. A larger amount of data may increase the accuracy and therefore, reduce the uncertainty connected to the prediction. However, it will not diminish it completely. This is an important aspect to take into consideration when utilizing the technology. Uncertainty in predictions poses a serious threat if the technology is applied to critical processes. For instance, a process performed at a nuclear power plant where the unlikely outcome can cause disaster.

Lastly, there is a risk associated with hidden biases. Even if the algorithms per se do not involve personal bias, there is a risk of bias that stems from the datasets used to train the algorithm. An example of this could be a machine learning algorithm that is trained by data from manual processes. Furthermore, the algorithms can also contain bias from the code it is built on. This may not be a deliberate intention by the designer of the algorithm and they are often unaware of the existence of the bias.

In conclusion, machine learning may have considerable potential in business processes as the hype revolving machine learning and artificial intelligence implies. However, there are also risks connected to this complex technology that must not be overlooked.