**Blog 6**

Reinforcement learning is one of the machine learning methods, used whenever the analytical models turn out to be inefficient or irrelevant for a particular case. RL refers to the behavioural psychology and the theory of reinforcement (creating correct behaviour patterns with penalties and rewards system). Contrary to other kinds of Machine Learning - supervised (task-driven) and unsupervised (data-driven) learning, it relies on the agent interacting with the environment it was settled in.

Over years of research in the AI field, reinforcement learning gained a number of variations, such as Q-learning, SARSA, Rescorla-Wagner model or Primary Value Learned Value. First of them, Q-learning, is usually responsible for dealing with some sort of maze, where it attempts to learn the value of a being in a certain state and take specified action. As a model-free algorithm, QL does not use transition probability distribution (associated with MDP), what makes it a form of explicit trail-and-error method. Q-learning begins the execution process with initializing a table for all state-action pairs, then the algorithm chooses an action and performs it based on current Q-value estimates. Finally, the algorithm measures the reward, updates itself and repeats the scheme until the learning process is stopped.

Another worth mentioning algorithm is Rescorla-Wagner Model of Classical Conditioning, presented in 1972 by Yale psychologists Robert A. Rescorla and Allan R. Wagner. Their mathematical model of Pavlovian conditioning makes an attempt to analyse the changes in associative strength between conditioned stimulus (signal) and subsequent stimulus as a result of a conditioning trial. The popularity of the R-W model is primarily related with clear and ordinal predictions, as well as a high efficiency rate it offers. R-W model is based on a belief, that the surprise effects triggers best learning processes. The greater is the surprise, the greater the learning, as stimulus followed by the unexpected factor gains associative strength with regards to that event.