2nd International Conference on
Artificial Intelligence, Robotics & IoT
July 15-16, 2019 | Amsterdam, Netherlands

Reinforcement Learning: A Gentle Introduction & Industrial Application

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Reinforcement learning learns complex processes autonomously. No big data sets with the "right" answers are needed: the algorithms learn by experimenting. Using reinforcement learning roboters learn to walk, beat the world champion in go or fly a helicopter.

The talk shows "how" and "why" reinforcement learning algorithms work in an intuitive fashion, illustrating their inner-workings by the way a child learns to play a new game. We show what it takes to rephrase a real world problem as a reinforcement learning task and take a look at the challenges to bring it into production on 7000 client in 42 countries all around the world.

Our industrial application stems from syphonic roof drainage systems. It warrants that large buildings like stadiums, airports or shopping malls do not collapse during heavy rainfalls. Choosing the "right" diameters is difficult, requiring intuition and hydraulic expertise. As of today no feasible, deterministic algorithm is known. Using reinforcement learning we were able to reduce the failrate of our existing solution – based on classic supervised learning - by more than 70%.