

7th International Conference on
Industrial Engineering, Productivity and Quality



Cryptocurrency Autonomous Trading Using Deep Reinforcement Learning with Sequential Sampling

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Abstract

Supervised learning systems relied on a thorough knowledge of how to trade the assets. However, due to the nature of financial trading, particularly in the cryptocurrency market, where there is no clearly defined aim, a reinforcement learning strategy would be a good fit for the problem. We will aim to develop an intelligent agent without using a supervised target by using reinforcement learning. Instead, we will fine-tune the agent's strategy over time by trading the cryptocurrency historically and attempting to optimize the trading profit. To divide the dataset into trading points, we employ sequential sampling. The trader also has complete control over which years are loaded, which models are used, and how the sampling split point is changed. According to our findings, a deep Q learning model with sequential sampling (DQNSS) outperforms a simple deep Q learning model (DQN) in terms of overall trading profit and execution time in the cryptocurrency market.

Keywords: Reinforcement learning, cryptocurrency trading, Sequential sampling, Deep learning.