**XXXV SALÃO de INICIAÇÃO CIENTÍFICA**

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| Título | Concurrent computing for accelerating financial reinforcement learning model training |
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Abstract

The financial market generates a large volume of data daily, allowing the increasing use of machine learning algorithms in building predictive models for the stock market. In this environment, time is a crucial factor since stock prices change daily, so the training time of models is a critical factor, but there is not as much concern about optimizing model training times, even though this is a critical factor. This work proposes a method to optimize the overall training time of 5 reinforcement learning algorithms that predict the weights of each stock in a stock portfolio. Experiments were conducted by varying the number of algorithms executed simultaneously, combinations of training runs of 2, 3, 4, 5 reinforcement learning algorithms run concurrently were tested. In addition, the computational characteristics of each algorithm were analyzed concerning the use of memory and processing. From the proposed combination of running the algorithms concurrently, it was possible to reduce the total training time by 33% compared to running the algorithms sequentially. Moreover, this execution led to a commendable 15% decrease in energy consumption. This work allows the use of 5 reinforcement learning algorithms with different characteristics, which perform differently in certain market conditions in a more efficient way with reduced time and energy consumption, thus allowing a wider use of these algorithms by the market.