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MACHINE LEARNING TECHNIQUES APPLIED TO IMPROVE PARALLEL DISCRETE EVENT SIMULATION OPTIMIZATION

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ABSTRACT

The use of discrete event simulation optimization methods is a tool commonly used as a decision making support systems, on industrial problems regarding the resource allocation to maximize some set of cost and revenue values. The present work proposed and tested an open source framework developed on Python, integrating different strategies for optimization including multicore parallelism, metaheuristic and machine learning applied to a resource allocation on a theoretical shop floor problem. The results showed optimization improvements on processing time from 88.5% to 95.2%, obtaining a solution 95.3% near the global optimum.

Keywords: discrete event, simulation, optimization, parallelism, machine learning, metaheuristic and industry.

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