

Optimization as a service in cloud environment

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Cloud computing provides on-demand access to a large amount of computing resources. This makes it ideal for executing large-scale optimizations using evolutionary algorithms without the need of owning any infrastructure. However, the price of engaging Cloud for computationally expensive evaluations can be high, so it is important to efficiently utilize those resources. In this paper we present OSICE - a comprehensive, cost-effective and easy-to-use Cloud-based optimization service for solving large-scale optimization problems using parallel evolutionary algorithms. OSICE offers machine learning based prediction engine for the estimation of IaaS engagement cost. It provides users with an assessment of the frameworks behavior on the underlying infrastructure in terms of Pareto optimal combinations of a total time required to complete their particular optimization, and a cost of resource consumption during that period. As a proof of concept, this framework has been used to solve real world complex optimization problem from the field of hydroinformatics. Obtained results show that by using proposed prediction engine, significant savings can be achieved both in terms of optimization time and infrastructure cost.

References

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