Distributing Workloads among Computing Nodes

# Summary

# The problem

The problem to which I want to find a solution can be thought of as distributing workloads (essentially programs) across computing nodes (servers). To minimize the costs of running those servers. That is how this project is connected to real world concerns.

Each server has a limited amount of resources and each workload consumes an amount of resources. The resources considered in this project are network bandwidth, processor time and storage.

Genetic algorithm overview

Limited version of the problem for it to be applicable

mention versus

Implementation

Results

Project about Genetic Algorithms for the Course Computational Intelligence.

The chosen Problem for the project tried to distribute a set of Workloads to a set of Computing Nodes. The Computation Nodes, meaning a machine with limited resources. It is meant to represent a single physical machine (e.g., one server in a computation centre). The workloads are meant to represent processes with known resource consumption characteristics, as in the average required Resources and the maximum required Resources are known. However, the workloads will never terminate. This sets apart this problem from the Job-Scheduling Problem, where jobs have other jobs as requirements and the total runtime of all the jobs needs to be minimized.

To find a solution to this problem, a genetic algorithm was used.