Predicting the Resources of Network Simulations

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Abstract

OOTB [1], Opportunistic protocol simulator On The Bench is a simulation-as-a-service platform developed to benchmark and evaluate opportunistic networking protocols and aims to improve the reproducibility and cross-comparability of OppNets data dissemination protocols. The simulations in OOTB are realized at the backend through the Opportunistic protocol simulator (OPS)[2] which is a model framework to simulate OppNets, written for OMNeT++[4] and INET framework where a user can perform simulations using different dissemination protocols and mobility models like SWIM[3]. This platform uses containerization techniques to run several simulations in parallel where each simulation takes certain amount of available resources and time to complete. It is important to demarcate or halt simulations that take longer durations and more resources to complete than usual as they hinder performing parallel simulations. In order to increase the number of performed simulations, we propose a resource predictor that predicts the resources and processing time required by a simulation prior to its execution based on its input parameters, so the user can recognize the odd simulation. We'll implement the predictor using two of the popular and best performing Machine Learning techniques to data. These models are built on the data collected from OOTB upon performing simulations. The results had demonstrated that these models are capable of predicting the resources with good training and testing MAE values.

References

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