Predicting the Resources of Network Simulations

Prerequisites:	- Programming skills (Python, C)
	- Basic knowledge of machine learning techniques
Level:	This topic is appropriate for Bachelor and Master Students
Language:	German or English

INTRODUCTION

The ComNets department has recently developed a simulation-as-a-service platform to benchmark and evaluate opportunistic networking protocols, called OOTB. This platform uses containerisation techniques to run several simulations in parallel. In order to increase the efficiency of the system (the number of performed simulations), a resource predictor is required, which predicts the memory and the processing time required for a simulation. The input of this predictor can be the parameters of the simulation itself. This project will develop and evaluate this predictor. More information about the OOTB platform can be found in [1]. A user account for OOTB will be provided.

PROJECT DESCRIPTION

The steps to follow include:

1. Get familiar with the OOTB platform, run sample simulations, analyse the output and the parameters.

2. Explore the already gathered simulation data and run further simulations to obtain a well balanced dataset for learning.

3. Propose 2 ML techniques to implement the predictor, implement and test them.

4. Evaluate the predictor with testing data from the obtained dataset and with new data.

5. Write the report, document and publish the dataset and the code.

This project can be extended into a master thesis by obtaining more and more complex data, applying further ML techniques, etc.

CONTACT

If you are interested in this work, please contact us via mail: projects@comnets.uni-bremen.de

References

[1] Anna Förster, Thenuka Karunathilake, Jens Dede, and Asanga Udugama. Benchmarking data dissemination protocols for opportunistic networks. In *Proceedings of the Workshop on Benchmarking Cyber-Physical Systems and Internet of Things*, CPS-IoTBench '21, pages 12–19, New York, NY, USA, May 2021. Association for Computing Machinery.