RL Based 6G Cellular Access Network Scheduler

Abstract

As the demand for mobile high bandwidth – low latency is increasing, the access network must become smarter and automatically adapt to rapid changes. A scheduler is a module that observes the network, receive traffic requests from all users and allocates a bandwidth and a specific route to each requested connection.

Fig. 1: 6G Example Access Network

In order to accomplish the scheduling task quickly and efficiently, you will develop a Reinforcement Learning based scheduler that observes the network (the environment), receives traffic requests and allocates route and bandwidth to each traffic request. The main focus of this semester’s project is to develop an OMNET++ simulator that will be used as the digital twin of the real-world 6G access network and replace the Routenet model that was used in last semester project.

Fig. 2: Reinforcement based Learning Scheduler
Project objective

Continue last semester project by developing an OMNET++ Simulator that replaces the Routenet estimator and evaluate its performance.

Project overview

1. Ramp-up last semester project [1].
2. Develop an OMNET++ simulator [2], [3].
3. Replace the Routenet module with your OMNET++ module.

Notes

- The above list is an estimate. Goals and tasks may be modified during the first few weeks of the projects before the CDR (Critical Design Review) at week 4 of the semester.

General requirements for all LCCN Projects are specified at the lab website:
https://lccn.cs.technion.ac.il/lab-courses/

Prerequisites:

1. Introduction to computer networks (236334) – Mandatory.
2. Reinforcement Learning background (for at least one of the team members)

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References:

[1] https://gitlab.cs.technion.ac.il/lccn/sp2022_routenet_scheduler