Forschungspraxis

On the comparison of joint and separate uplink/downlink RAN slicing

Network slicing is a novel approach used in 5G networks to enable the deployment and coexistence of heterogeneous network with various Quality of Service (QoS) requirements in the same physical infrastructure. In the Radio Access Network (RAN) the network slicing concept is complex is due to the stochastic nature of wireless channels and scarce resources. Vast of ongoing research deal with optimization approaches for RAN slicing, however most of the focus is on the downlink scenario. Nonethess, a joint optimization of downlink and uplink scenarios can render the problem more complex, but on the other hand can procude better results for the overal system behavior.

In this master's thesis the student will focus on a combined downlink/uplink scenario of a cellular system and provide a joint optimization algorithm to enhance the network performance and compare it with the separate uplink and downlink approach.

Prerequisites

- Basic knowledge of cellular systems 4G/5G.
- Good knowledge of programming languages Python, Matlab.
- Good mathematical background, especially on optimization techniques.
- Knowlegde of tools such as Gurobi is a plus.

Advisors

Arled Papa