

Forschungspraxis

Cost evaluation of a dynamic functional split

Increased interference is one of the main drawbacks of cell densification, which is an important strategy for 5G networks to achieve higher data rates. Function centralization has been proposed as a strategy to counter this problem, by letting the physical or scheduling functions coordinate among one another. Nevertheless, the capacity of the fronthaul network limits the feasibility of this strategy, as the throughput required to connect low level functions is very high. Fortunately, since not every function benefits in the same way from centralization, a more flexible approach can be used. Instead of centralizing all functions, only those providing the highest amount of interference mitigation can be centralized. In addition, the centralization level, or functional split, can be change during runtime according to the instantaneous network conditions. Nonetheless, it is not fully know how costly it is to deploy and operate a network implementing a dynamic functional split.

In this internship, the cost of a radio access network implementing a dynamic functional split will be evaluated. A simulator already developed at LKN will be used and extended to produce network configurations adapted to the instantaneous user position and activity. Then, off-the-shelf cost models will be improved and used to estimate the deployment and operating cost of the network under multiple scenarios. Furthermore, the conditions on which a dynamic functional split is profitable will be investigated. Improvements on the functional-split selection algorithm will be proposed, such that the operator benefits from enhanced performance without operating at exceedingly costly states. Finally, a model that takes into account the cost of finding and implementing a new functional split will be employed and its results compared to the previous results.

Advisors

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