Beyond 5G network optimization for Social VR applications

One of the most challenging applications targeted by next generation (beyond-5G) mobile networks is augmented/virtual reality (AR/VR), in particular "Social VR" applications where multiple distant users are able to interact fluently with each other through all human senses. In such scenarios, the ICT infrastructure (for data transmission and processing) must be able to handle extremely high-bandwidth streams while keeping the end-to-end latencies very low under (strongly) varying conditions regarding network load and ultra-high frequency radio channel quality. This research assignment aims at the development of methods and algorithms for dynamic allocation of radio transmission and edge computing resources in order to achieve these requirements. In particular, it will focus on optimal exploitation of the so called connect-compute trade-off (dynamic, optimal distribution of end-to-end latency over computational and transmission tasks).

The research assignment is embedded in TNO's long-term research program "Social XR". There will be active cooperation with researchers working on related topics in this program.

We are looking for students with Computer Science, Electrical Engineering or Mathematics background. Specifically required expertise: 4G/5G Mobile network technology, discrete event simulation, mathematical optimization, AI/ML (or a subset of those).

Where: TNO ICT (The Hague)
                https://www.tno.nl/en/focusareas/informationcommunicationtechnology/
Start/duration: February 2021 / 7-9 months
Contact: prof. dr. Hans van den Berg (J.L.vandenBerg@tno.nl / J.L.vandenBerg@utwente.nl)