Master Thesis Proposal: 5G mm-wave MIMO Systems

Background:
Today's mobile networks use various frequencies below 3 GHz. In order to find much greater bandwidth, the industry is assessing a number of candidate bands above 6 GHz particularly 28GHz where several hundreds of MHz of modulation bandwidths are considered. Due to high path loss at these frequencies, beamforming by large antenna arrays is critical. There are however several challenges that come with large antenna arrays at mm-wave frequencies particularly with respect to hardware impairments, calibration, linearization, precoding, cost, energy efficiency, and thermal management.

Scope:
In Gothenburg Research Center, we have developed various system simulation platforms involving realistic channel and hardware models, precoding, linearization algorithm, and other layers of the wireless communication system. In this thesis project, we would like to use the currently available platform and try to address any of the challenges presented above related to algorithm and signal processing and propose new or alternative solutions. The student will also be able to make his own contribution to the system simulation platform. There are several topics available.

Qualifications:
- You must be enrolled in a Swedish University to apply
- Advanced knowledge in Matlab
- Good understanding wireless communications and MIMO systems and fundamental understanding of wireless channel.
- Motivated, strong social skills, team spirit, flexible, creative

Duration:
The thesis project is appropriate for one student and is sized for 30 ECTS and will last for a minimum period of 6 months. This is a paid master thesis work. It is also possible to extend the student project after thesis until 10 months if desired. The student will work at Gothenburg Research Center, Huawei Technologies Sweden AB.

Examiner: Prof. Tommy Svensson at the Department of Electrical Engineering, Chalmers University of Technology, Gothenburg, Sweden.

Supervisor: Dr. Hossein Nemati at Gothenburg Research Center, Huawei Technologies Sweden AB.

Please send your detailed Resume/CV and transcript of records in English via e-mail to hossein.nemati@huawei.com

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