MASTER THESIS – MUTING PATTERN STRATEGY FOR POSITIONING IN CELLULAR NETWORKS

Background
Positioning in cellular networks is an important feature. It is used when a user is making an emergency call. By using the reported position of the caller the emergency assistance can be directed to the right location. This puts high requirements on the accuracy of the reported position. One of the methods used for positioning in cellular networks is OTDOA (Observed Time Difference of Arrival). The cell phone then measures the PRS (Positioning Reference Signal) from each cell and calculates the propagation time difference towards two different antennas. This difference can later be used for calculating the position of the cell phone.

The PRSs are transmitted simultaneously for all cells on one frequency and as such there is a risk that the measurements are degraded by interference. One method that can be used to improve the interference situation is by applying transmission and muting patterns to each cell and thereby separating their transmission in time domain.

Thesis Description
This thesis will focus on investigating and comparing different approaches on muting pattern assignments for each cell. In order to do the investigation, a simulation environment needs to be developed in Matlab. The different muting pattern strategies shall then be tested and compared using the simulation environment.

The complexity of the simulation environment can be adjusted depending on the number of students doing this thesis study.

Qualifications
Valuable skills are:

- Good knowledge in system and signal theory
- Knowledge in simulations with MATLAB or similar
- Understanding of telecommunications, wireless communications and cellular networks
- Good communication skills in English

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