Department of Electrical Engineering Technion—Israel Institute of Technology
Signal Acquisition Modeling and Processing Lab - המעבדה לחישה מידול ועיבוד אותות

Project Proposal

Pilot Contamination Mitigation Using Graph Theory

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The first step in every communication scheme is to estimate the channel between the user and the base station that serves him. This can be done by letting the user send a known sequence to the base station, called "pilot sequence", and then let the base station estimate the channel from the received signal. Pilot contamination is a phenomenon in multi-user multi-cell wireless communication systems, where users from different cells interfere with each other channel estimation. The result is that the estimated channel is contaminated by interfering channels. We wish to use tools from graph theory to solve the pilot contamination problem. The pilot contamination problem can be made similar to a clustering problem on graphs.

The goal of the project is to develop define the relevant graph for the problem and try different algorithms to solve it.
The project will include research next to matlab implementation

Required background: Introduction to Digital Signal Processing (044198), Design and Analysis of Algorithms (046002)