A Data-Aided Channel Estimation Scheme for Decoupled Systems in Heterogeneous Networks

ABSTRACT

Uplink/downlink (UL/DL) decoupling promises more flexible cell association and higher throughput in heterogeneous networks (HetNets), however, it hampers the acquisition of DL channel state information (CSI) in time-division-duplex (TDD) systems due to different base stations (BSs) connected in UL/DL. In this paper, we propose a novel data-aided (DA) channel estimation scheme to address this problem by utilizing decoded UL data to exploit CSI from received UL data signal in decoupled HetNets where a massive multiple-input multipleoutput BS and dense small cell BSs are deployed. Numerical results verify that the analytical BER and NMSE results are close to the simulated ones and a remarkable gain in both NMSE and DL rate can be achieved by DA method in multiple scenarios with different modulations.

EXISTING SYSTEM

- A novel three-stage dataaided scheme is proposed to solve the DL channel acquisition problem of decoupled UEs at MBS.
- To implement the dataaided scheme, once data detection is finished at SBSs, the decoded data sequences and estimated bit error ratio (BER) values are supposed to be sent to the MBS via wired backhaul which is assumed to be error-free and latency-free.

PROPOSED SYSTEM

- Our proposed data-aided channel estimation scheme for cellular HetNets with decoupled access.
- The main task here is for all UL BSs to recover channels from the UL training signal, which is a common procedure in training based systems.
- MMSE is another widely used channel estimator which provides better performance at the cost of higher complexity and prior statistics information in terms of correlation matrices of channels and noises.

SYSTEM REQUIREMENTS

HARDWARE REQUIREMENTS

- Processor - Intel core i3
- RAM - 2B
- Hard Disk - 20 GB

SOFTWARE REQUIREMENTS

- Operating System : LINUX
- Tool : Network Simulator-2
- Front End : OTCL (Object Oriented Tool Command Language)

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