Joint Optimization Of Computation And Communication Power In Multi-user Massive Mimo Systems

ABSTRACT

With the growing interest in the deployment of massive multiple-input-multiple-output (MIMO) systems and millimeter wave technology for fifth generation (5G) wireless systems, the computation power to the total power consumption ratio is expected to increase rapidly due to high data traffic processing at the baseband unit. To optimize the energy efficiency of multi-user massive MIMO systems, an upper bound on energy efficiency is derived. Considering the constraints on partially-connected structures, a suboptimal solution consisting of baseband and RF precoding matrices is proposed to approach the upper bound on energy efficiency of multi-user massive MIMO systems. Furthermore, an oPtimized Hybrid precOding with computation and commuNication powEr (PHONE) algorithm is developed to realize the joint optimization of computation and communication power. Simulation results indicate that the proposed algorithm improves energy and cost efficiencies and the maximum power saving is achieved by 76.59% for multi-user massive MIMO systems with partiallyconnected structures.

EXISTING SYSTEM

- In existing system, successive interference cancellation (SIC)based hybrid precoding method, that energy efficiency of a single user massive MIMO system can be improved with low complexity.
- It is partially-connected structure that attracts practical implementation.
- Moreover, which optimize energy efficiency for partially connected structures use simple precoding optimization methods, such as optimizing baseband and RF precoding independently.

PROPOSED SYSTEM

- In this paper we derive a joint optimization of computation and communication power for multi-user massive MIMO systems with partially-connected structures.
- A new energy efficient optimization model is proposed for multi-user massive MIMO systems, which is based on partially-connected structures.
- The upper bound of energy efficiency is derived for multi-user massive MIMO systems with partially connected structures.
- Then, utilizing the alternating minimization method, a suboptimal solution is derived for the baseband and RF precoding matrices to optimize energy efficiency.

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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