Optimal and Fair Energy Efficient Resource Allocation for Energy Harvesting-Enabled- PD-NOMA-Based HetNets

ABSTRACT

In this paper, the tradeoff among the energy efficiency, fairness, harvested energy, and system sum rate is studied. In this regard, various fairness methods, namely, max–min fairness, proportional fairness, and minimum delay potential fairness in power-domain non-orthogonal multiple access-based heterogeneous cellular networks are investigated. Since the proposed optimization problems are non-convex and intractable, the existing methods to solve the convex problems could not be directly used. To overcome this difficulty, an iterative algorithm based on successive convex approximation is used. Moreover, to show the optimality gap of the proposed solution method, an optimal approach based on the monotonic optimization is applied in which we first transform each of the proposed optimization problems into a monotonic optimization problem of canonical form, and then, we obtain the optimal solution of each problem, which coincides with the optimal solution of the original non-convex problem.

EXISTING SYSTEM

- In existing system, an optimal resource allocation in multicarrier PD-NOMA based single cell system by applying monotonic optimization.

- In, radio resource allocation for heterogeneous traffic in GFDM-PD-NOMA system is considered.

- An optimization problem to maximize the long term system harvested energy by satisfying the quality of service constraints.

PROPOSED SYSTEM

- We proposed the fair energy efficient resource allocation for the down-link of a PD-NOMA based HetNet system by considering energy harvesting.

- The main problems are decomposed into two sub-problems: subcarrier assignment problem and power allocation problem.

- Moreover, an optimal algorithm based on the monotonic optimization is devised to achieve the optimal solution of the proposed problems which is used to evaluate the optimality gap.

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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