Robust resource allocation for heterogeneous wireless network a worst-case optimisation

ABSTRACT

- The multiuser RA problem in HetNets is formulated under the consideration of bounded channel gain uncertainties where both the cross-tier channel and intra-tier channel are simultaneously considered.
- The non-linear optimisation problem is converted into a geometric programming problem that is solved by using Lagrange dual methods in a distributed way.
- Simulation results show that the proposed algorithm can well restrain the effect of channel uncertainty and achieve a good robustness.

EXISTING SYSTEM

- With the application of 4G mobile communication technology and the exponential growth of intelligent terminals, communication technologies move towards the direction of large-scale networks and multiple wireless access technologies (radio access technologies).
- Currently, the proposed microcell network is considered as a new communication technology with the features of low power consumption and high efficient data transmission.

PROPOSED SYSTEM

- With the development of fifth generation wireless communication technology, how to improve system capacity and spectrum efficiency is a crucial problem in resource sharing of heterogeneous networks.
- Most of existing resource allocation (RA) schemes in HetNets focus on perfect channel state information, however, exact channel information is difficult to obtain under link delay and stochastic channel condition.
- In order to resolve the RA issues under channel uncertainties, a robust RA algorithm is proposed to maximise the sum data rate of microcell users where the users are subjected to the individual transmission power constraint and the cross-tier interference constraint of macrocell users.

HARDWARE REQUIREMENTS

- Processor - Pentium –III
- Speed - 1.1 Ghz
- RAM - 256 MB(min)
- Hard Disk - 20 GB
- Floppy Drive - 1.44 MB
- Key Board - Standard Windows Keyboard
- Mouse - Two or Three Button Mouse
- Monitor - SVGA

SOFTWARE REQUIREMENTS

- Operating System : Windows 8
- Front End : Java /DOTNET
- Database : Mysql/HEIDISQL

CONCLUSION

- In order to improve the system capacity and stability of HetNets, this paper studies a robust RA algorithm based on orthogonal frequency division multiplexing, which is used to effectively control the interference to macrocell users.
- First, the RA optimisation probelm in a multiuser HetNet with on macrocell and multiple microcells is constructed.
- Second, the bounded channel uncertainties model of uncertain channel gains are established for formulating robust RA problem with an infinite number of constraints.
- Third, we utilise auxiliary variables to transform the original non-convex optimisation problem into a GP problem. A robust RA algorithm is designed via Lagrange dual theory and gradient updating method.

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