

Stochastic Modeling of Wireless Networks

A case study*

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Abstract

In wireless communication networks, interference produced by simultaneous transmission of the undesired transmitters and useful signal sources is one of the central aspects in system designs, since it dominantly limits network performance. We sampled data from a centrally controlled IEEE 802.11agn wireless sensor network established at the main campus of University of Debrecen consisting of 54 non-mobile access points communicating in 29 active channels. The captured channel noise level was analyzed as a time series by statistical methods. There were compared the characteristic parameters of the time series to establish relation among them. Enhanced analysis was executed to identify noise sources in physical space and/or in time. Based on the power loss exponent, the proposed method helps to filter out the rogue base stations and the unwanted noise sources.

Keywords: WiFi, radio channel, noise and interference, stochastic process

MSC: 60B60

References

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*The publication was supported by the TÁMOP-4.2.2.C-11/1/KONV-2012-0001 project. The project has been supported by the European Union, co-financed by the European Social Fund.