

Strategic Adaptation and Learning for Multimedia Transmission over Cognitive Radio Networks

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Abstract

One emerging challenge for multi-user multimedia communication is the transmission over dynamic cognitive radio networks. Currently, each unlicensed wireless user will try to acquire as much of the available transmission opportunities (spectrum 'holes') as possible, unless a pre-emptive mechanism exists in the network. We propose a dynamic and informationally-decentralized resource management approach for wireless multimedia that changes the passive way users are currently adapting their communication strategies. We also investigate new communication algorithms that jointly consider available resources, derived application utilities, user risk attitudes and willingness to pay for resources, to enable the strategic participation of wireless users in the resource exchange game.