EFFICIENT SPECTRUM SHARING VIA DIFFERENT COORDINATION SCHEMES BETWEEN THE PRIMARY AND SECONDARY USERS IN COGNITIVE RADIO NETWORKS

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Abstract:

Traditional fixed spectrum allocation policy is no longer able to satisfy the rapid spectrum demand of emerging wireless applications due to the shortage of available spectrum. On the flip side, the spectrum already assigned to existing applications is often underutilized in time, frequency, and location. The concept of cognitive radio is envisaged to solve both the spectrum scarcity and underutilization problem. The cognitive radio network is introduced based on the concept of cognitive radio. The cognitive radio network offers efficient spectrum sharing using three coordination schemes between PUs and SUs (inter-user collaboration) and between SUs themselves (intra-user collaboration).

Each of these coordination schemes faces different challenges depending on network settings, user requirements, and so on. In this dissertation, we take a look at these coordination schemes and address some of these challenges for ensuring effective spectrum sharing. Our findings from the research work will help to design the next generation wireless technology, build a better spectrum ecosystem, encourage new business models, and make significant progress in efficient spectrum sharing.