A Self-Coexistence Strategy for Spectrum Allocation Using Selfish and Unselfish Game Models in Cognitive Radio Networks

Authors : Noel Jeygar Robert, V. K.Vidya

Abstract : Cognitive radio is a software-defined radio technology that allows cognitive users to operate on the vacant bands of spectrum allocated to licensed users. Cognitive radio plays a vital role in the efficient utilization of wireless radio spectrum available between cognitive users and licensed users without making any interference to licensed users. The spectrum allocation followed by spectrum sharing is done in a fashion where a cognitive user has to wait until spectrum holes are identified and allocated when the licensed user moves out of his own allocated spectrum. In this paper, we propose a self –coexistence strategy using bargaining and Cournot game model for achieving spectrum allocation in cognitive radio networks. The game-theoretic model analyses the behaviour of cognitive users in both cooperative and non-cooperative scenarios and provides an equilibrium level of spectrum allocation. Game-theoretic models such as bargaining game model and Cournot game model produce a balanced distribution of spectrum resources and energy consumption. Simulation results show that both game theories achieve better performance compared to other popular techniques

Keywords : cognitive radio, game theory, bargaining game, Cournot game
Conference Title : ICACCT 2019 : International Conference on Advances in Cognitive Communication Technologies
Conference Location : Dubai, United Arab Emirates
Conference Dates : December 19-20, 2019