Abstract

Wireless users use radio frequency (RF) channels for data and message communication. The recent research reviles that the most appropriate to tackle the issues related to spectrum utilization is a function of time and space calls for dynamic access strategies that adapt to the electromagnetic environment. Cognitive radio is one such solution with the ability to sense the RF channel evaluation and adaptively react intelligently in order to optimize the usage of the available spectrum. In this paper we focus on opportunistic resource allocation between the access points (AP) and the wireless stations (STA) for the required spectrum management policies of the wireless systems. A concurrent communication of the cognitive users, competing over the physical resources for the end users. Based on the requirements of this we propose and analyze a channel capacity [6] enhancement technique to design a cognitive multiple input
multiple output (MIMO) transceiver system and propose low complexity antenna selection [15] algorithms. Using this technique only a subset of the available antennas to transmit or receive signal greatly reduce the cost and complexity of the physical layer resources of cognitive MIMO system.

References

- Peter Cain, "Using Channel Condition Number to Visualize MIMO Performance," IWPC MIMO, 12 November 2008
- Spatial Channel Model for Multiple Input Multiple Output (MIMO) Simulations; 3GPP TR 25.996, V7.0.0, available on line at http://www.3gpp.org/FTP/Specs/html-info/25996.htm.

Index Terms

Computer Science

Wireless Communications

Keywords

Spatial Diversity  Mimo  Rf Chain  Spatial Multiplexing  Cognitive Radio  Binary
Particle Swarm Optimization