Abstract

The main task for a cognitive radio system is to adapt to the transmission parameters in a dynamically changing environment. The nature of wireless channels and the number of transmission parameters to be optimized in various layers add more complexity to the adaptation process. In these situations Case Based Reasoning (CBR) agent along with optimization algorithm provides a robust solution. CBR Agent develops cases as the changes occur in the environment and acquires an understanding of the system. As new situations occur, experience from the previously developed cases is taken into consideration and a solution to the system is provided. In real time with training, the Cognitive Engine (CE) learns the variations occurring in the environment and utilizes the previously existing cases to provide new solution. As well as if abruptly some unexpected situation is encountered then the optimization algorithm is initiated and a solution is designed as per the need of the environment and this case is also added to the case list for future reference. Hence variations in the environment are mapped extensively and the optimization process becomes more efficient. In the present work case based reasoning along with particle swarm optimization is implemented.
References


Index Terms

Computer Science  Wireless

Keywords

Artificial Intelligence, Case Based Reasoning, Cognitive Radio Networks, Particle swarm Optimization, Reasoning agent.