

333. DESIGN OF COGNITIVE ENGINE USING GENETIC ALGORITHM

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This paper presents a genetic-algorithm driven, cognitive radio decision engine that determines the optimal radio transmission parameters. In past years, the rapid revolution in wireless communication has increased the demand of radio spectrum to fulfill quality of service (QoS) requirements of wireless applications, leading to spectrum overcrowding. To solve the spectrum overcrowding problem, cognitive radio (CR) has emerged as a leading technology because it can intelligently sense an unused spectrum without creating any harm to authorized users. Once the spectrum is sensed, to fulfill QoS requirement of the application and to utilize the radio resources more efficiently, an intelligent decision to allocate an optimum spectrum is a prime requirement. In this project a spectrum allocation procedure is proposed. Genetic Algorithms (GA) an evolutionary computational technique is used which works on Darwin theory of evolution. It defines the radio in the form of chromosomes and genes. The procedure is modeled using Matlab and the application's QoS requirements are given as input to the GA procedure, which results in an optimum solution after several evolutions. The performance analysis results illustrate the trade-offs between the convergence time of the GA and the size of the GA search space.

Keywords---Cognitive Radio,Genetic Algorithm, QOS, Optimization, Spectrum allocation .

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