

ABSTRACT

In the use of a Cognitive Radio Network (CRN) wireless network, it has a major role in meeting the needs of information technology, maximizing and effectively dividing the allocation of radio resources because spectrum resources are increasingly scarce. Basically, the use of additional algorithms in the way CRN works not only adds to personal benefits but also benefits to all systems that are directly related to the use of CRN technology, the ACO (Ant Colony) algorithm and the Hungarian algorithm are part of the determination and division of resource allocation stages in CRN.

Basically CRN was developed because it allows two types of users, Primary User (PU) and Secondary User (SU), to use the same service without any other medium. At the development stage there are several shortcomings, namely in the form of interference that occurs when PU and SU use the same service or channel, this affects QoS (Quality Of Service), data processing in the form of Datarate, Energy Efficiency Spectral Efficiency, Fairness on PU and SU.

Using the Ant Colony Algorithm as a solution in this final project, the sumrate value for scenario one has decreased by 1% from the Greedy algorithm, 1% increase from the Hungarian algorithm, and an increase of 6.3% from the Ant Colony Minimum algorithm. And the sumrate value for scenario two has increased 0.81% from the Greedy algorithm, an increase of 2.93% from Hungarian, and an increase of 2.81% from the Ant Colony Minimum.

Keyword : *Cognitive Radio network, Ant Colony Optimization (ACO), Hungarian, Greedy Primary User, Secondary User.*