

## **PERFORMANCE ANALYSIS OF CLUSTER BASED COOPERATIVE SPECTRUM SENSING IN COGNITIVE RADIO NETWORKS USING GENETIC ALGORITHM**

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Cooperative spectrum sensing has been proven to improve the sensing performance of cognitive user however it cannot obtain maximal throughput in Amplify-and-forward Cognitive Radio Network (AF-CRN). Implementing superposition approach in AF-CRN extends the sensing time of secondary users (SU) right before its reporting time slot and each SU sends its measurement result containing amplified report to the Cluster head (CH), while the CH with soft-fusion report is forwarded to the fusion center (FC). With this approach better sensing performance is obtained than with the traditional rigid strategy. In addition to this, the sum rate of primary and secondary networks is also investigated and found that the system sum rate is maximized by 14.56% over traditional strategy. Further we optimize the probability of detection and probability of false alarm in AF-CRN to minimize the probability of error of SU using genetic algorithm.