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**Title- Fuzzy Logic based cognition in RF sensing: A case study to vehicular communication.**

Advancement in vehicular technology offers various avenues for the transmission of intra vehicular commands and dynamic access to the wireless services while the car is in transit. With the tremendous evolution in wireless communication in the recent years, the demand for accessing the radio frequency spectrum has seen an enormous surge in the number of customers, due to new and growing technologies like Wimax, 4G and Cognitive Radio. A similar surge in demand is observed in the vehicular market as well giving rise to a demand in a new class of in-car infotainment system and ability to respond in emergency. However, the biggest challenge to accommodate these demands is limited by the scarce spectrum. Fortunately, this is well handled by the cognitive radio system, which utilises the otherwise scarce RF spectrum in an opportunistic manner. The use of cognitive radio in vehicular technology has given rise to Cognitive Radio enabled vehicles or CRVs. In a cognitive radio network each CRV follows the basic cognitive radio cycle to access the spectrum opportunistically which is originally assigned to a licenced user. It is observed that out of all the basic functionalities described by the cognitive radio cycle, spectrum sensing is the most crucial step, which enables the CRV to sense an empty frequency band and utilise it for accessing it to their best interest. In this talk, details about the various methods of spectrum sensing emphasising on Energy detection method using soft computational methods have been discussed that can help the CRVs access the scarce radio frequency spectrum in an intelligent manner by use of soft computation methods like Neural Network and Fuzzy Logic.