**PROJECT NAME: -** Design of Reconfigurable MIMO Antenna Integrated with FSS With Enhanced Performance for 5G Application.

Here in this project, we are designing a compact multiple-input–multiple-output (MIMO) antenna it is presented for double-sided Super-wideband applications. This antenna will be comprising four identical slot-loaded diagonal clipped Square-shaped radiation patches and a partial ground plane to reduce the mutual coupling between the antennas and enhance the isolation. We are planning to achieve massive bandwidth so; a half-circular aperture will be etched from the partial ground plane. Then we are usingFrequency selective surfaces (FSS)possess, which will be utilized to improve the radiation efficiency of the metal-surface mounted MIMO antenna. To maximize isolation a train square plus shaped decoupling structure is embedded at both sides of the substrate. Through this proposed MIMO antenna, we are trying to achieve a resonating bandwidth of 1–15 GHz and a bandwidth ratio of 15:1. An excellent diversity performance has been achieved with a low envelope correlation coefficient (ECC) lower than 0.001. The antenna elements are placed in such a formation to obtain better isolation. Also, by applying machine learning (ML) in this project we will be able to control the propagation of the antenna, by this propagation control phenomenon we will maximize the propagation in the needy direction.  This antenna could be able to use for IoT applications. The Envelop Correlated Coefficient also will be low and the diversity Gain will be high & the power consumption will be low rather than any other antenna.

This is our basic idea for this project. In the future, we will try to apply a lot more applications with this antenna.

**Super-wideband: Range since they possess an average impedance bandwidth of larger then 158Ghz & exceed the ratio bandwidth.**

**Envelop Corelated Coefficient: Envelope Correlation Coefficient tells us how independent two antennas' radiation patterns are. So, if one antenna was completely horizontally polarized, and the other was completely vertically polarized, the two antennas would have a correlation of zero.**