Research Proposal

1. **Title of the research:** Compact MIMO antennas for wireless applications.
2. **Research area:** Antennas for wireless applications.
3. **Objectives:** To use MIMO Antennas (of a particular feed) for UWB applications.Triple band MIMO antennas referred.

4. **Abstract:**

In recent years, most of the wireless mobile and communication systems, the Multiple-Input Multiple-Output (MIMO) antenna has been used.
The term MIMO stands for Multiple Input Multiple Output. It refers to multiple antennas used for transmission and reception of electro-magnetic waves. There are two techniques by which complex data symbols are transmitted using multiple antennas viz. STBC (Space Time Block Coding) and SM (Spatial Multiplexing).
MIMO antenna technologies are the key to increase the network capacity. It has started with the sectorized antennas. These antennas operate as one cell and illuminate about 60 to 120 degrees. In GSM, the capacity can be tripled, by antennas at an angle of 120 degrees. Adaptive antenna arrays intensify spatial multiplexing using narrow beams.
To increase the quality factor, higher data rate should be used, and increase the quality of signal.
Proposal presents a compact multiple input multiple output (MIMO) antenna design for ultra-wideband (UWB) applications.
Ultra wideband (UWB- 3.1 ghz to 10.6 ghz) technology is a radio technology that uses electromagnetic waves with a very low power spectral density occupying a bandwidth of more than 25% of a centre frequency , or more than 0.5 ghz , for a short range remote sensing , high bandwidth communications or object positioning.
Narrow idea:-A tentative narrow idea on planning to work with CPW(co planar waveguide) fed MIMO antennas is also liked .

5. **Literature Review:**

A compact, high efficient CPW (co-planar waveguide) fed MIMO antenna which is used for various wireless applications is proposed in the papers. The work[1] presents a compact multiple input multiple output (MIMO) antenna design with good isolation for ultra-wideband (UWB) applications. The proposed antenna contains two identical monopoles that are placed parallel to each other and which are fed by a 50-ohm coplanar waveguide (CPW).In the work [3], the proposed antenna is evaluated using IE3D simulation software.

6. **References:**

[1]. Aziz Dkiouak,Alia Zakriti,Mohssine El ouahabi,(2020) “Design of CPW-fed MIMO Antenna for Ultra-Wideband Communications” ; ScienceDirect ; Procedia Manufacturing 46 (2020) 782–787 ; 13th International Conference Interdisciplinarity in Engineering (INTER-ENG 2019)
[2]. Rohit Mathur, Santhanu Dwari (2018) “Compact CPW-Fed ultra wideband MIMO antenna using hexagonal ring monopole antenna elements” AEU - International Journal of Electronics and Communications Volume 93, September 2018, Pages 1-6
[3]. D. Dileepan and R. Sanmugasundaram(2017) “A HIGH EFFICIENT COMPACT CPW FED MIMO ANTENNA FOR WIRELESS APPLICATIONS” International Journal of Mechanical Engineering and Technology (IJMET) ; Volume 8, Issue 10, October 2017, pp. 53–59, Article ID: IJMET_08_10_007

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