



Module PMRF-ISSS040/2022

## Introduction to Automotive Radars

### Name of the PMRF student

**SOHAM LAKHOTE**

### Required background of the students taught

3<sup>rd</sup>/4<sup>th</sup> year UG students in ECE, Electronics, Electrical Engineering or Master's students from the above background. Should have a good knowledge about signals and systems, digital signal processing, and MATLAB basics. Basic knowledge of Antennas, Electromagnetics and circuits is a plus.

### Online session coordinator

Will be chosen from the list of registrants

### Details of the content of the module

- 1) Motivation for the course and the importance of radars in vehicles. (Lecture)
- 2) Basic Definition related to radars and different type of radars. (Lecture+ Problem Solving)
- 3) Friis space equation and Radar range equation (Lecture+ Problem Solving)
- 4) Signal Processing Revision for FMCW operation. (Lecture)
- 5) Range and Velocity estimation using Frequency-Modulated Continuous Wave (FMCW) radar operation. (Lecture+ Problem Solving)
- 6) Use of multiple antennas and the concept of Radar data cube. (Lecture and MATLAB demonstration)
- 7) End-to-End Radar System Design (MATLAB demonstration)
- 8) Dissecting the State-of-the-art Automotive Radar.



Reference: TechBullion

### Schedule of the module

Start Date – 19th Nov. 2022

Lecture Schedule – Every Tuesday and Saturday, 4-5:30 PM

Number of Lectures: 10-11

End Date – Tentatively by the end of the December.

Meeting link : Will be shared later

[Link](#)

Contact email ID: [issf.forum@gmail.com](mailto:issf.forum@gmail.com)

Registration link:

<https://forms.gle/Gf3NLUoyGT6UxkFb8>