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Visit to IISc Organized by Department of Electronics and Communication Engineering

Report on Open Day Visit to IISc

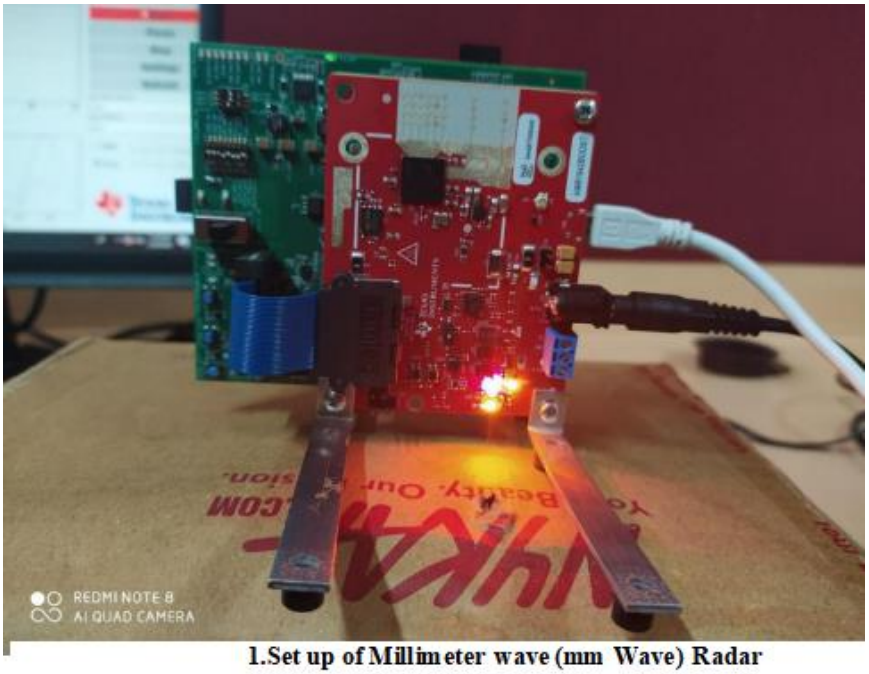
An **Open Day** visit to Indian Institute of Science - **IISc**, Bangalore, was organized by the Department of Electronics and Communication, on 29th February 2020. It was a one-day visit by 99 students of ECE and 8 students of EEE, of the 6th semester, along with 4 faculty members.

The Indian Institute of Science organized an 'Open Day' event to showcase its activities to the student community and general public, on **Saturday, 29th February 2020,** from 9 am to 5 pm.

Group photo at IISc campus

Our students went around the campus and visited projects in various departments. They were enlightened by the live demos and explanations of projects, by IISc students.

Millimeter wave (mm Wave) was one of the projects.



1.Set up of Millimeter wave (mm Wave) Radar

Millimeter Wave (mm Wave) is a special class of radar technology that uses short wavelength electromagnetic waves. Radar systems transmit electromagnetic wave signals that are then reflected by objects in their path. By capturing the reflected signal, a radar system can determine the range, velocity and angle of the objects.

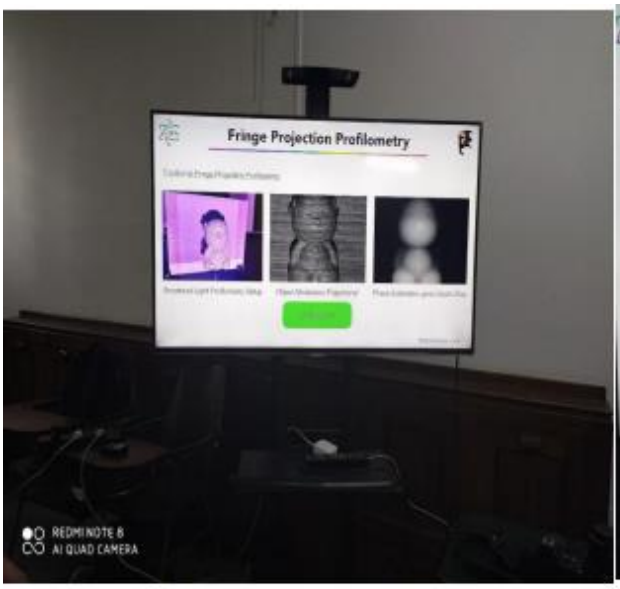
Millimeter Wave radars transmit signals with a wavelength that is in the millimeter range. This is considered a short wavelength in the electromagnetic spectrum, and is one of the advantages of this technology. Indeed, the size of system components such as the antennas required to process mm Wave signals is small. Another advantage of short wavelengths is the high accuracy. An mm Wave system operating at 76–81 GHz (with a corresponding wavelength of about 4 mm) will have the ability to detect movements that are as small as a fraction of a millimeter.

A complete mm Wave radar system includes transmit (TX) and receive (RX) radio frequency (RF) components; analog components such as clocking; and digital components such as analog-to-digital converters (ADCs), microcontrollers (MCUs) and digital signal processors (DSPs). Traditionally, these systems were implemented with discrete components, which increased power consumption and overall system cost. System design is challenging due the complexity and high frequencies.

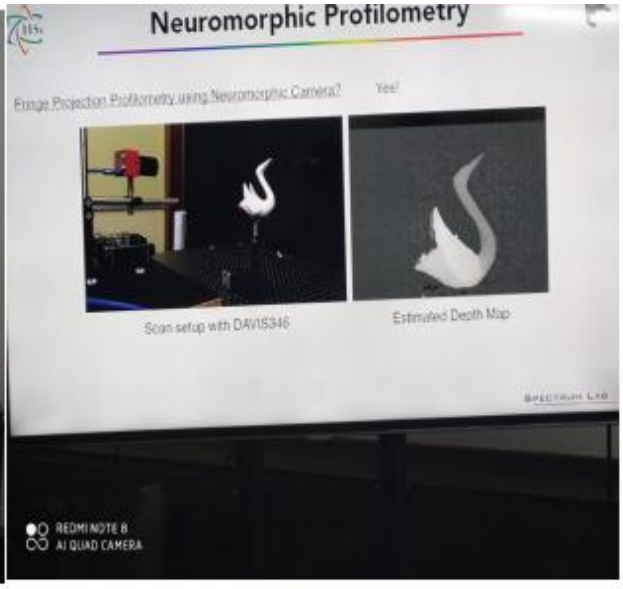
2.Millimeter wave set up for 5G testbed

With a view to developing the ecosystem for 5G mobile communication technologies, the Department of Telecommunication (DoT), Govt. of India, has come forward to fund the 5G Testbed project, which is a large scale project involving top Indian institutes, namely IISc Bangalore, IITM, CEWiT, IITD, IITK, IITH and SAMEER. This project will create a 5G prototype and testing platform, for developing innovative baseband algorithms, under the guidance of the ECE faculty at IISc. The project will deliver an end-to-end 5G testbed comprising of 5G BS and UE nodes that support enhanced mobile broadband (eMBB), Ultra low latency communication (URLLC), and massive MTC, including NB IoT services. The operating frequency includes both sub 6 GHz and mm Wave frequencies.

Fringe projection Profilometry and Neuromorphic Profilometry were some of the other projects displayed.



3.Fringe projection profilometry



4.Neuromorphic Profilometry

Our students were enlightened about new trends and technology, and gained a lot of practical knowledge.

The Industrial Visit was a great benefit for the students, as it helped them directly gain a practical working knowledge of new trends and technology.

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