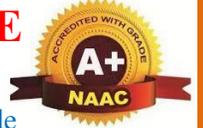# NARAYANA ENGINEERING COLLEGE :: NELLORE
(AUTONOMOUS)
Permanently affiliated to JNTUA Ananthapuramu, Approved by AICTE, Accorded 'A' grade
by Govt. of AP, Recognized by UGC 2(f) & 12(B), ISO 9001:2015 certified Institution,
Approved with 'A+' Grade by NAAC

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

A Report of **Online STTP** on "**Applications of Signal, Image And Video Processing in VLSI using Xilinx System Generator [Phase - II] "**

Department of **E**lectronics & **C**ommunication **E**ngineering, Narayana Engineering College, Nellore, organized a "ONLINE STTP ON APPLICATIONS OF SINGAL, IMAGE AND VIDEO PROCESSING IN VLSI USING XLINX SYSTEM GNERATOR". The STTP was conducted on the following dates: 05 – 10 – 2020 to 10 – 10 – 2020. The total number of participants attended the faculty development program is 72. The purpose of this STTP is to bring together researchers & PG students from Academia and Engineers & Scientists from industry and R&D institutes to have discussions on the recent advances in Applications of signal, image & Video processing in VLSI using Xilinx System generator. High end image or video processing applications are easy to solve in MATLAB.

OBJECTIVES OF STTP:

- Providing a clear & thorough understanding on fundamental and application areas of signal processing in VLSI.

- Providing an in-depth knowledge in use of Xilinx system generator for VLSI Signal Processing applications.

- Providing example of advantages of high level design tool such as System Generator for FPGA design.

- Hands on experience on signal and Image processing algorithm synthesis & implementation in FPGA.

- Awareness of industrial applications of FPGA implementation.

Figure: Resource Person Giving Introduction to Embedded Systems

The following members are the resource persons for the programme.

1. **Dr.Farukh Hashmi,** NIT Warangal

2. **Nagendra Bandi,** CoreEL Technologies

3. **Dr. P. Srihari Rao,** NIT Warangal

4. **Dr. P. Muralidhar,** NIT Warangal

The inaugural function of the workshop started with a welcome address by Dr. K Murali, HOD-ECE and he presented the theme of the STTP and said that applications of Signal, Image and Video processing in VLSI using Xilinx System Generator is playing an important role in various applications. Later, the Principal of NECN addressed the staff members and said that STTPs will help for the growth of the faculty in all facets of their professional lives. STTPs will provide resources which will help the faculty to develop as scholars, to publish and share at professional conferences, and to improve their performance in the class room.
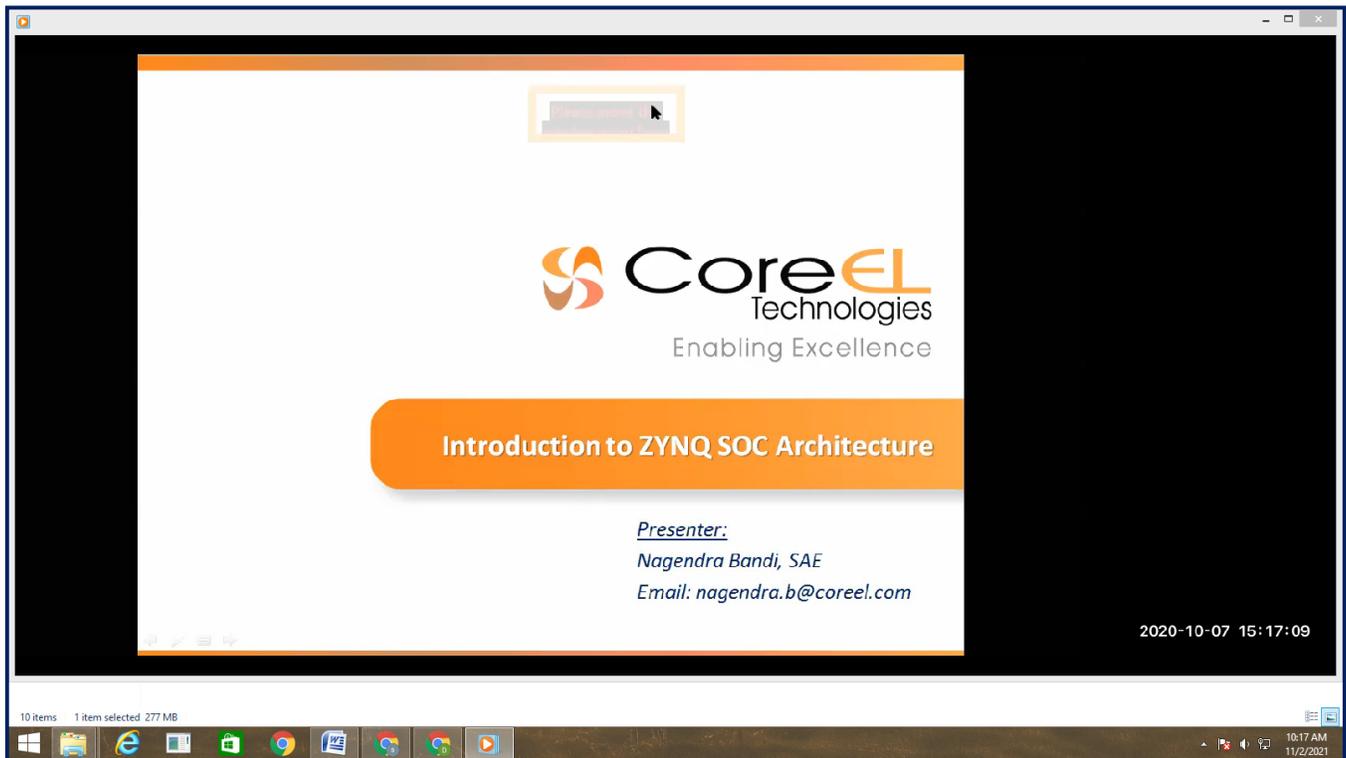
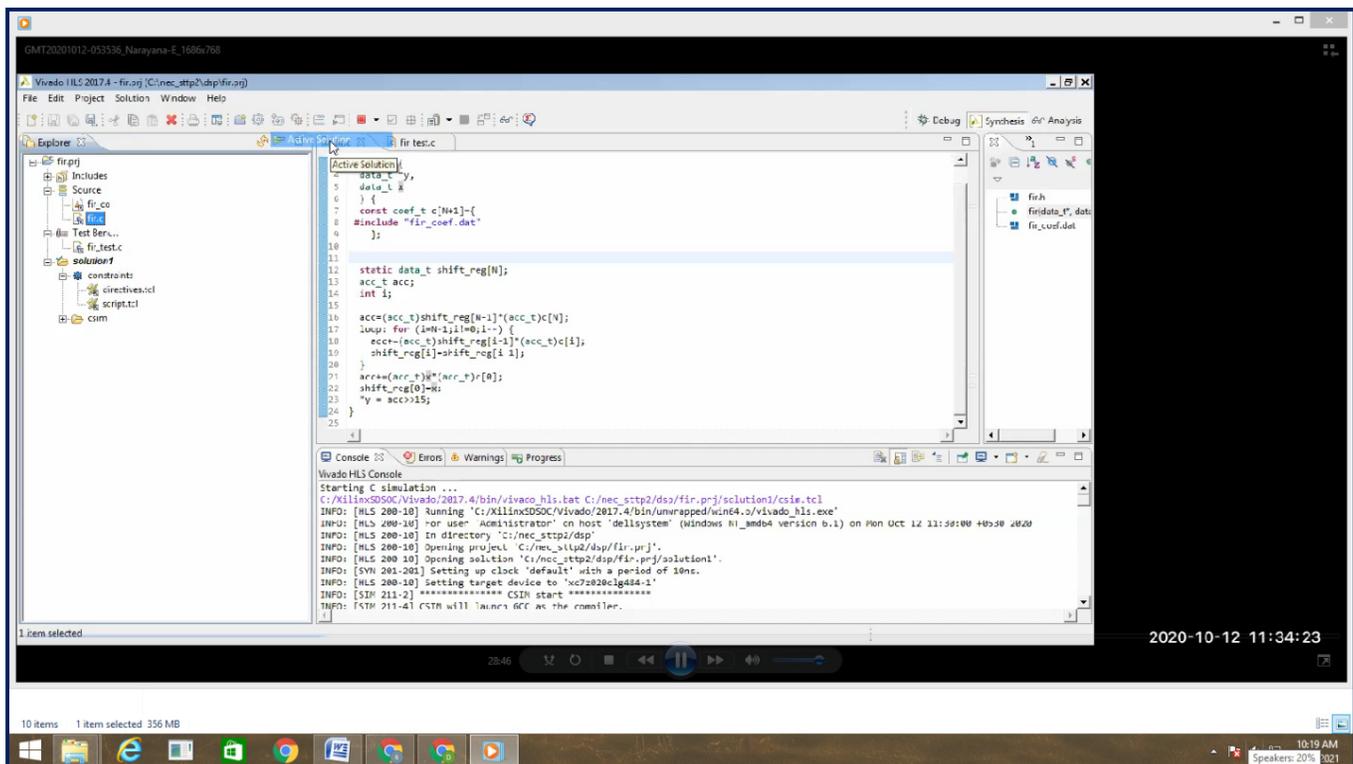*Figure: Resource Person Explaining about ZYNQ SOC Architecture*

Figure: Designing FIR filter using Vivado Tool

Dr. Farukh Hashmi, NIT Warangal addressed the participants about Embedded Systems, IoT and DSP Processor Architecture. She discussed about the different architecture with example. Finally, she discussed about the application of DSP architecture.

Mr. Nagendra Bandi, CoreEL Technologies addressed the participants about the following topics using laboratory:

1. Introduction to ZYNQ SOC
2. Introduction to ZYNQ SOC and IP Integrator
3. Configuring ZYNQ Processor and FPGA
4. Writing Application and Implementing on Hardware
5. Creating Custom IP for DSPs and Validation
6. Adding Custom IP to Block Diagram and Implementing Application

Dr. P. Srihari Rao, NIT Warangal addressed the participants about the following topics: Low Power Integrated Circuit and Energy harvesting IC for IoT Applications. He explained about the various research problems in Low Power Integrated Circuits. Finally, he discusses about the Energy harvesting IC for IoT Applications and shows the comparison with the state of the art methods.

Dr. P. Muralidhar, NIT Warangal addressed the participants about the following topics: ARM Processor Architecture and HW/SW Co-Design. He addressed the various applications of Arm Processor Architecture and HW/SW Co – Design.

Expected outcomes:
- Opens new avenues for faculty members to pursue research in Application of signal, Image and Video Processing in VLSI using Xilinx System Generator.

- Detailed knowledge of DSP Architecture and Embedded Systems.

- Importance of VLSI using Xilinx System Generator in today's trends of life.