ANALOG AND DIGITAL VLSI DESIGN USING CADENCE TOOLS

IEEE MVSR SB Circuits and Systems Society Chapter in collaboration with department of Electronics and Communication Engineering, MVSREC has organized a one-week value added course on "Analog and Digital VLSI Design using Cadence tools" from 5th December 2022 to 10th December 2022. The main objective of this course was to provide hands-on training on VLSI design technologies to final year students which will help them for placements and higher education.

Student Branch Mentor:
Dr. Atul Negi,
Professor,
School of CIS,
University of Hyderabad

Student Branch Advisor:
Dr. G. Kanaka Durga,
Principal and Professor,
MVSR Engineering College.

Student Branch Counsellor:
Dr. D. Hari Krishna,
Associate Professor, EEE Dept.,
MVSR Engineering College.

WIE Student Branch Advisor:
Mrs. G. Ushasri,
Assistant Professor, IT Dept,
MVSR Engineering College.

PES Advisor:
Mr. Y. Laxmi Narasimha Rao,
Assstant Professor, EEE Dept.,
MVSR Engineering College.

CS student branch advisor:
Mrs. B. Saritha
Associate Professor, CSE Dept.,
MVSR Engineering College.

CASS Student Branch Advisor:
Mrs. S. Aruna
Assistant Professor, ECE Dept.,
MVSR Engineering College.

Student Branch Executive Committee:

Chair	Mr. Hemanth Kollapudi
Vice Chair	Mr. Kodali Naga Seshu
Secretary	Mr. Rama Ankith
Joint Secretary	Ms. M. Kathyayani
Treasurer	Ms. Hetalee Pravin Warad
Operating Committee Head	Mr. P. Tarun Kumar

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Secretary	Ms. Seelam Mrudula Naidu
Joint Secretary	Ms. K. Ujwala
Treasurer	Ms. Narsing Varshini

Power Energy Society:

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Vice Chair	Ms. Kankipati Shravya
Secretary	Mr. K. Pavan Harshith
Joint Secretary	Mr. Puram Sai Teja
Treasurer	Ms. B. Rajya Laxmi
Women in Power	Ms. Kuntoori Shravani

Computer Society:

Chair	Mr. M. Hareen
Vice Chair	Ms. Kotra Aishwarya
Secretary	Mr. Md Rafae Ahmed
Joint Secretary	Ms. Ch Venkata Satya Sreeya
Treasurer	Mr. K Kranthi Chaitanya Goud
Women in Computing	Ms. Anoushika Boddupalli

Circuits & Systems Society:

Chair	Mr. Gautham Purohit
Vice Chair	Mr. D. L. N Srihith
Secretary	Ms. Mudumba Harshitha
Joint Secretary	Ms. Jindam Pragna
Treasurer	Mr. Erram Sai Vineeth

Operating Committees:

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Content - Writing	Mr. T. Karthikeya, Mr. Krishna Chaitanya N
Web-Master	Mr. Vinay Kumar, Mr. K. Samuel

Session Details:

Date: 5 December, 2022 – 10 December 2022
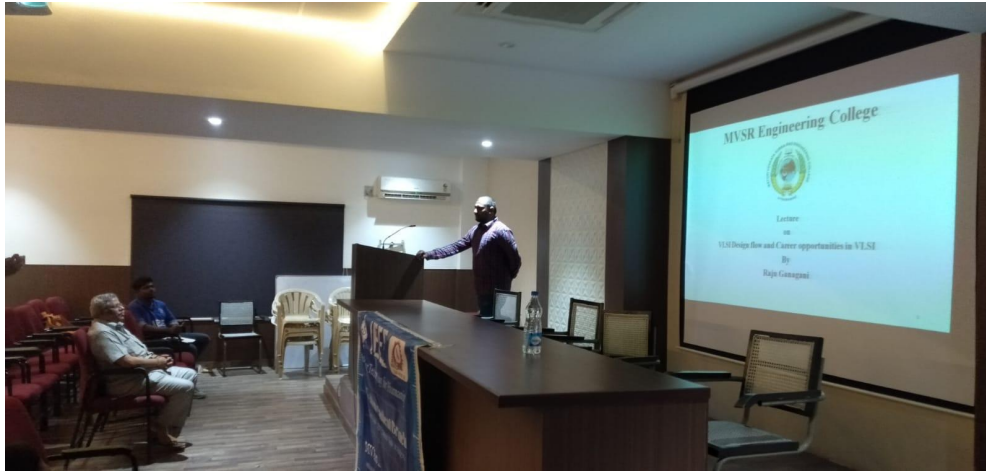
Timings: 11:00AM to 11:00AM

Number of Attendees: 43

Resource Persons:

1. **Mr. Raju Ganagani:** Mr. G. Raju, an alumni of MVSR Engineering College, is a Senior Analog Layout Design Engineer at Micron Technology. He has 8+ years of hands-on experience in Analog and Mixed Layout. He has worked on all stages of IP development life cycle with expertise in Cadence Virtuoso, Cadence Virtuoso XL Layout editor. He has process node experience on TSMC 28nm, 16nm, 7nm, Samsung 7nm, Intel 7nm and 10nm chips.

2. **Mrs. S. Aruna:** Mrs. S.Aruna is working as Asst. Professor in the department of Electronics and Communication Engineering in MVSR Engineering college. She has a total teaching experience of 19 years. Her specialization is Analog and mixed signal VLSI Design. She is pursuing her Ph.D from JNTU Kakinada. She has expertise in VLSI Cadence Tools and PSpice programming. Mrs. S. Aruna is the faculty advisor of Circuits and Systems society, MVSR Student Branch.

3. **Mrs. Smithashree Mohapatra:** Mrs. Smithashree Mohapatra is working as Asst. Professor in the department of Electronics and Communication Engineering in MVSR Engineering College. Her specialization is in Digital IC Design, VLSI Design, Verilog HDL. Mrs. Smithashree Mohapatra has 6 research publications and 1 patent to her credit. She is also an active IEEE Member.

DAY-1: Guest Lecture on VLSI Design

The morning session of Day-1 started with Dr. S. Suryanarayana, HOD, ECE Deptartment, MVSREC, addressed the gathering. Then, Mr. Gautham Purohit, Chairperson, IEEE MVSR CASS, welcomed everyone to the 5-day long Value added course and gave a brief about the schedule that will be followed throughout the course. After that, Mr. E. Sai Vineeth, Treasurer, IEEE MVSR CASS, gave an introduction about the speaker for the session.

Mr. G. Raju delivering the lecture

After the introduction, Mr. G. Raju, came onto the stage and started the session. The main points that were covered in the session are about the different layers present on a chip, about the hierarchy in which the chips are produced, about different level present in VLSI chip design and about the various job opportunities present at different stages.

Participants in the guest lecture

Dr. B. Sarala, Prof., ECE Dept., giving Memento to Mr. G. Raju
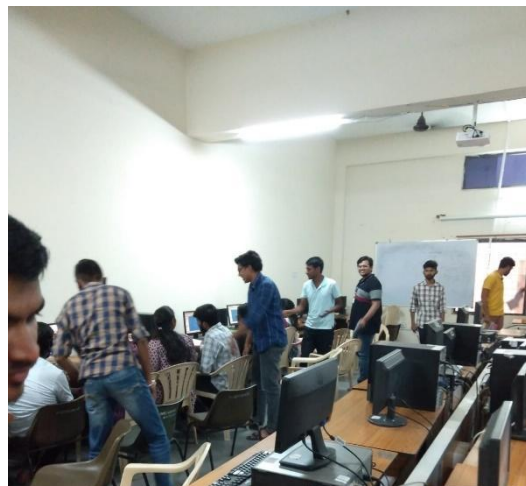
Finally, the morning session came to an end successfully as Mr. Gautham Purohit gave a vote of thanks.

Students practising Cadence Virtuoso tool on Day-1

In the Afternoon session, the hands-on training started as all the students were taken to the Cadence lab in ECE Department. Mrs. S. Aruna gave a brief explanation about all the basic pre-requisite concepts needed for VLSI design. In addition to this, an introduction to the Cadence Virtuoso tool was given to the students and basic circuits like Inverter, NAND gate were realised in the software.

DAY-2

Participants in Cadence lab

The second day focused on giving more practise for students on Cadence Virtuoso in the Cadence lab to help the students get good knowledge on using the software. Many circuits like NOR Gate, NAND Gate, XOR Gate were realized in the software.
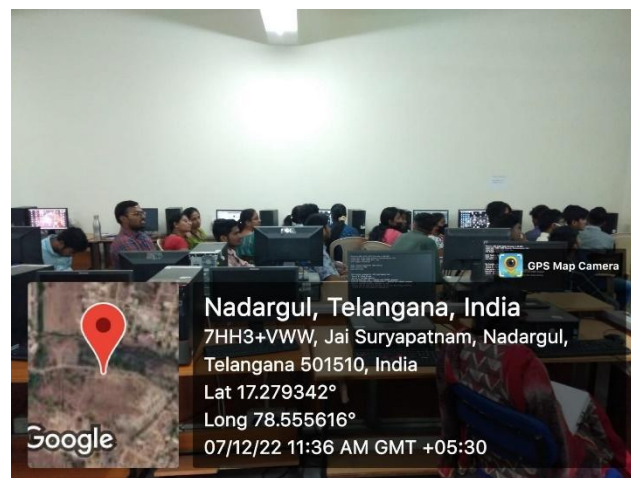
DAY-3

In the morning session students realised complex circuits in Analog design such as CS Amplifiers and then physical design for all the circuits using Layout Design were done in this session. This was the last session for Analog Design concepts.

Mrs. Smithashree Mohapatra delivering lecture on Digital design concepts

In the afternoon session, introduction to Digital design concepts was given by Mrs. Smithashree Mohapatra. Students were introduced to Digital design software like Cadence Genus, Innovus and Incisive.

Students in Digital design lecture

DAY-4

On this day, students focused on building and realizing various digital circuits such as adders, subtractors, Ripple carry adders and Counters. The main idea was to give good knowledge on using the Cadence Genus, Innovus and Incisive software and to get good hands-on practise on those softwares.
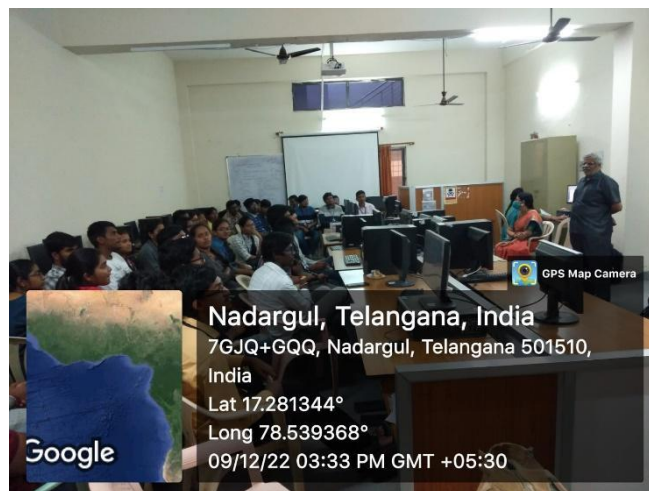
Mrs. S. Aruna and Mrs. Smithashree Mohapatra solving queries of students while practicing
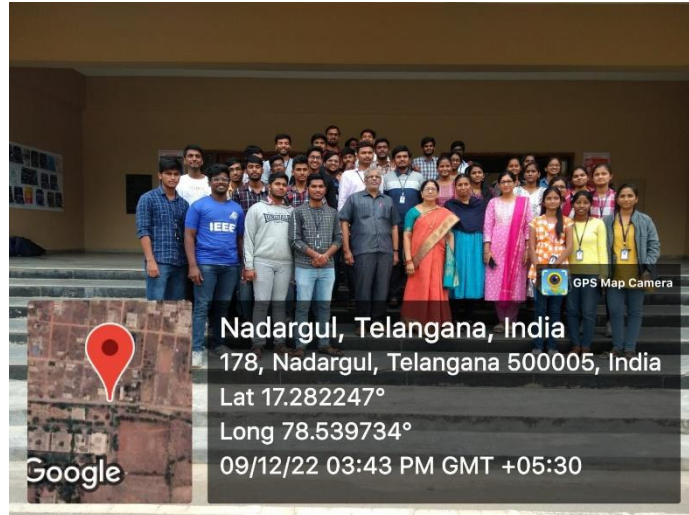
DAY-5

On this day, students practiced all the circuits and all the queries were answered by the resource persons. In addition to this, students formed various teams of size 3-4 members and selected a mini-project to work on. All the projects were realized on this day under the guidance of resource persons, Mrs. S. Aruna and Mrs. Smithashree Mohapatra.

In addition to this, a test was conducted on this day on both Analog design and Digital design concepts that were taught to the students in all the previous sessions.

Dr. S. Suryanarayana addressing students after the test

At last, the five-day long value-added course ended with Dr. D. Suryanarayana, HOD, ECE Dept., MVSREC addressed all the students and guided on getting jobs in VLSI domain in future.

Group picture of all the participants

Finally, on the next day all the students submitted their mini-projects and the five-day long value-added course finished successfully after the certificates were issued to the students in the Valedictory session.

REPORTED BY:

IEEE MVSR SB

List of Attendees:

SNo.	Name	Roll No	Contact No
1	Rithik Gangadhara	2451-19-735-079	8297797955
2	Akshay Mourya Bollu	2451-19-735-114	9390391679
3	M. Yerri Swamy	2451-19-735-059	8179748280
4	P S Kamal	2451-19-735-310	9390271058
5	SingiReddy AbhishekReddy	2451-18-735-159	9010797314
6	K. Sai Spoorthi	2451-19-735-314	6281725044
7	Vinni Bobbili	2451-19-735-124	9652835283
8	E Sai Vineeth	2451-19-735-061	9550657359
9	Ch Jayasimha Reddy	2451-19-735-313	8341417287
10	Bhanu prakash vankala	2451-19-735-099	7013422952
11	Chaitanya Kumar Gudipati	2451-19-735-047	9398015112
12	Akula Sharath Chandra	2451-19-735-052	9133003042
13	Adarsh Gurram	2451-19-735-056	9177244189
14	Marri Hitesh Reddy	2451-19-735-057	8374151892
15	Rapolu Vishal	2451-19-735-050	8500335901
16	K.Shravani Reddy	2451-19-735-044	9912561608
17	Kona gouthami	2451-19-735-051	9390585462
18	Bukka Poojitha Reddy	2451-19-735-060	7386871916
19	Vaddimukala Balaji	2451-19-735-035	9391028609
20	K Kishore Kumar	2451-19-735-142	6303390628
21	Mailaram Bhargavi	2451-19-735-154	9391290297
22	Nikitha pandit	2451-19-735-106	7989624798
23	Sucharitha Kadari	2451-19-735-308	7702501427

24	Harsh vardhan	2451-19-735-120	9398854175
25	Buna reddy veni varshitha	2451-19-735-169	9652107931
26	Sreelekha Mathangi	2451-19-735-034	7287837249
27	Puppala Mithilesh	2451-19-735-073	7995704945
28	Pothuraju prasanth	2451-19-735-157	7013773062
29	Enugula Kalyan	2451-19-735-303	8184918522
30	N. Charitha	2451-19-735-012	9390648646
31	K. Nagaraju	2451-19-735-021	8187096861
32	D. Tejas Chandra	2451-19-735-048	9390001461
33	K. Sruthi	2451-19-735-049	9390068645
34	L. Yeshwanth	2451-19-735-134	9652572384
35	Kavya Sri	2451-19-735-015	9100539609
36	Balaji Ram Ganesh	2451-19-735-172	9989563471
37	D. Sravya	2451-19-735-115	9182805685
38	Abhiay Shiva Prasad	2451-19-735-077	9866543999
39	Daniel	2451-19-735-089	7702473189
40	Saketh	2451-19-735-173	6304207384
41	J. Sai Chakrapani	2451-19-735-074	7893185630
42	Mirza Shazib	2451-19-735-086	9059126648
43	I. Anusha	2451-19-735-085	9959312096