Report on

Expert Talk

"Semiconductor Future and Opportunities"

Organized by: Department of Electronics & Communication Engineering, ATME College of Engineering

Date: 24th February 2025

Audience: 4th Semester Students

Resource Person: Mr. Sunil Kumar, Founder, Vivarthan Technologies

Coordinators: Mr. Guruprasad K N, Assistant Professor, Dept. of ECE, ATMECE
Mr. Chandrashekhar P, Assistant Professor, Dept. of ECE, ATMECE

Venue: AB208

Timings: 12.30 to 1.15 PM

Introduction:

India is aiming to become the global hub for semiconductor design, manufacturing and technology development. However, the shortage of semiconductor chips has exposed vulnerabilities in the semiconductor supply chain and highlighted the need for increasing domestic manufacturing capacity. Semiconductors are essential to almost all sectors of the economy including aerospace, automobiles, communications, clean energy, information technology and medical devices etc.

The Department of Electronics & Communication Engineering at ATME College of Engineering organized an expert talk on **"Semiconductor Future and Opportunities"** on **24th February 2025.** The session aimed to provide students with insights into the semiconductor industry, its structure, and emerging opportunities. Mr. Sunil Kumar, Founder of Vivarthan Technologies, served as the resource person, sharing his vast experience and knowledge in the field.

Objectives of the Event:

The expert talk was organized with the following objectives:

- To provide insights into the semiconductor industry and its future opportunities.

- To educate students about different types of semiconductor companies and their roles.
- To familiarize students with the chip design process and its significance in the industry.
- To highlight India's position in the semiconductor sector and the growing opportunities in the domain.
- To inspire students to consider VLSI and semiconductor design as a career option.

Topics Covered:

The session covered multiple aspects of the semiconductor industry, including its classification and the chip design process.

1. Types of Companies in the Semiconductor Market

The semiconductor industry comprises various types of companies, each playing a crucial role in the ecosystem. Mr. Sunil Kumar classified them into the following categories:

a) Product (OEM) Based Companies: Apple, Google, Samsung, IBMb)
b) Chip Design Companies: Texas Instruments (TI), Intel, Qualcomm, Broadcom, NVIDIA, AMDc)
c) Fabrication Companies: TSMC, UMC, Intel, Global Foundries, Samsungd)
d) EDA (Electronic Design Automation) Companies: Cadence, Synopsys, Mentor Graphicse)
e) IP (Intellectual Property) and VIP (Verification IP) Companies: ARM, Cadence, ANDES Technology, Synopsys

2. Chip Design Process

Mr. Sunil Kumar elaborated on the chip design process, highlighting the key steps involved:

a) Chip Design Specification: Defining the functional requirements of the chip.
b) Architectural Design: Planning the overall structure and flow of the chip.
c) Behavioural & Functional Modelling: Simulating the chip's expected performance.
d) Logical Implementation: Translating design into logical components.
e) Synthesis & Testing: Converting the logical design into a hardware representation and verifying functionality.

f) Place & Route (PNR): Determining the physical layout of the components on the chip.

g) Design Layout: Finalizing the physical and mask layout before fabrication.

3. India Today in Semiconductor Industry

India is rapidly emerging as a significant player in the global semiconductor industry. Key government initiatives, such as the "Semicon India Program," have been launched to boost semiconductor manufacturing, research, and skill development. Companies like Tata Electronics, Vedanta-Foxconn, and ISRO are investing heavily in semiconductor design and fabrication, strengthening India's position in the global market.

Following are the some of the geo-tagged photos of the event.

Acknowledgments:

The Department of Electronics & Communication Engineering extends heartfelt gratitude to Mr. Sunil Kumar for delivering an insightful session. Special thanks to the HOD, faculty coordinators and student volunteers for their efforts in organizing this event. We also acknowledge the support of Management, and the Principal ATME College of Engineering for providing the platform to conduct such knowledge-enhancing programs.

Impact of the Program on Students:

The talk proved to be highly beneficial for the students, broadening their understanding of the semiconductor industry and career prospects in the VLSI domain. The interactive session encouraged students to explore job opportunities in various sectors, including chip design, fabrication, and electronic design automation. As a direct outcome of the seminar, over 30 students expressed their keen interest in pursuing VLSI as their domain for the Domain Specific Training (DST) projects.

Outcome of the Event:

- Enhanced student knowledge of semiconductor companies and job opportunities.
- Provided a structured understanding of the chip design process.
- Motivated students to explore VLSI as a specialization.
- Strengthened industry-academic collaboration through expert interaction.

Conclusion:

The session on "Semiconductor Future and Opportunities" provided students with valuable insights into one of the most dynamic and rapidly evolving industries. The comprehensive discussion on different types of companies, the chip design process, and India's role in the semiconductor landscape helped students make informed career decisions.
The session was concluded at 1.20 PM.

Coordinators:
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