

## Course Objective

- To promote current thrust areas in Semiconductor Design using Machine Learning Techniques among the faculty members/ Industrial persons.
- To enrich the knowledge of Semiconductor Design using Machine Learning in the field of research and development

## Course Contents

- Introduction to Semiconductor, Design of ML for VLSI Design
- Hardware Fundamentals for Machine Learning
- Hardware Accelerator for Data Flow Systems
- Design Principles for Machine Learning Accelerators
- Machine Learning for Hardware Design Automation
- Design Challenges and Opportunities
- Case Studies and Industry Trends
- Hands-on Learning and Project

## Outcomes

- Understanding the Semiconductor Design Fundamentals and Machine Learning basics
- Understand how Machine Learning techniques can be seamlessly integrated into various stages of Semiconductor design, enhancing efficiency and outcomes.
- Recognize the significance of merging VLSI and Machine Learning in addressing industry demands, preparing students for cutting-edge technologies.

## Organizing Team

CA. V. K. Dharmarajan, B.B.A., F.C.A  
Secretary  
Dr. S. Senthil, M.E., Ph.D.  
Principal

## Resource Persons

- **Dr. N C Shivaprakash**  
Department of Instrumentation and Applied Physics, IISc, Bangalore
- **Dr. M. Surendar**  
Associate Professor, NIT, Karaikal
- **Dr. Suresh Balanethiram**  
Assistant Professor, NIT, Puducherry
- **Dr. A. Amalin Prince**  
Professor, BITS Pilani Goa Campus
- **Dr. V. Nithish Kumar**  
Associate Professor, VIT, Vellore
- **Dr. S Rajaram**, Professor , TCE, Madurai
- **Dr. N B Balamurugan**, Professor , TCE, Madurai
- **Mr. Rajiv**, Software Engineer, Microchip Technology
- **Mr. Shivaprasad B K**, Execution Manager, Entuple Technologies, Pvt. Ltd., Bengaluru
- **Mr. Navaneetha Krishnan V**, Senior Field Application Engineering, Entuple Technologies, Pvt. Ltd., Bengaluru

## Industrial Visits

- QUATEK Technologies India Private Limited, SIDCO Industrial Estate, Kappalur, Madurai. [qtechpcb@gmail.com](mailto:qtechpcb@gmail.com), +91-9025278369.
- Quantanics Techserv Pvt Ltd, No.207/49 A, VOC Nagar, North Street, PP Chavadi, Madurai-625016, [support@quantanics.com](mailto:support@quantanics.com), +91 90879 40111

AICTE Training and Learning  
(ATAL)

Academy Sponsored



One Week  
Faculty Development  
Programme on

**Beyond Moore's Law: Machine Learning-Driven Approaches to Semiconductor Design**

16.12.2024 to 21.12.2024

**Coordinator**

**Dr. R. Suresh Babu**

Professor and Head of the Department / ECE,  
Dean (Academic Courses)

**Co-Coordinator**

Dr. T. Prathiba, & Mr. S. Alwyn Rajiv  
Assistant Professor / ECE

**Organized by**

**Department of Electronics and Communication  
Engineering**

**(Accredited by NBA, New Delhi)**



**(An Autonomous Institution - AFFILIATED TO ANNA UNIVERSITY, CHENNAI)**  
S.P.G.Chidambara Nadar - C.Nagammal Campus  
S.P.G.C. Nagar, K.Vellakulam - 625 701 (Near VIRUDHUNAGAR).





## About the College

Kamaraj College of Engineering and Technology is established in 1998 – 1999. Our College becomes Autonomous from 2020. It is rightly named after the son of soil, Bharat Ratna Sri. K. Kamaraj who was the undisputed leader of the suppressed downtrodden and a champion of free education for Masses. Our College is approved by AICTE, New Delhi & Accredited by NBA, NAAC with “A” Grade and affiliated to Anna University Chennai. It is promoted and supported by Virudhunagar Hindu Nadar’s Mahamai Tharappus in Virudhunagar. The College attracts outstanding students from different parts of India by virtue of its discipline and infrastructure facilities. . Our College is a 25 years old engineering college with currently 9 UG Programme and 2 PG Programme and with 8 Research Center departments. Our college is recognized as Research Institute by Anna University. Out of 9 departments 7 departments (CSE, ECE, IT, MTR, EEE, Mechanical, Biotechnology) are NBA Accredited departments.

## About the Department

The Department of Electronics and Communication Engineering is established in the year 1998. In 2011, the department started post graduate program, M.E. degree in Communication and Networking. The Department has received reaccreditation from the NBA for the period 2023 to 2026. The Department is recognized as Research Center by Anna University Chennai. The Department has 13 highly qualified and well experienced faculty members. The department is regularly doing consultancy work to nearby industries like TVS Eurogrip, Idhayam Oil Mills, Amogaa Products etc., The Department is well equipped with fully air conditional laboratories to cater the present academic and industry requirements. The department is conducting various value added and seminars to update students and faculty members with the knowledge of emerging fields towards industrial applications.

## About the FDP

**\*FDP Covers the following topics in depth.**

**Understanding VLSI Fundamentals:** Develop a firm understanding of the fundamentals of VLSI design, including transistor-level design, circuit optimisation, and layout methods.

**Learn the fundamentals of machine learning:** Gain a working understanding of supervised, unsupervised, and reinforcement learning as well as other basic machine learning ideas, algorithms, and techniques.

**Identify Synergies:** Examine possible connections between machine learning (ML) and VLSI design, taking into account the ways in which ML approaches can improve each stage of VLSI development, from architecture design to production.

**Study real-world case studies:** Where machine learning approaches have been successfully used to address VLSI design difficulties such as power optimisation, defect detection, and design automation to analyse case studies.

**Apply ML to VLSI:** Gain the knowledge and expertise necessary to incorporate machine learning methods into VLSI design workflows. This will allow participants to use ML algorithms for projects including layout optimisation, yield improvement, and performance boosting.

**Stay Current:** Examine new breakthroughs and trends in VLSI design and machine learning to keep participants up to date on the most recent advancements in these areas.

## Important Dates

Last date for Registration : 09.12.2024

Intimation of selection : 10.12.2024

Confirmation of Participants : 11.12.2024

## Contact Details

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Dr. T.Prathiba, Assistant Professor, 8667709132

E-mail : [prathibaece@kamarajengg.edu.in](mailto:prathibaece@kamarajengg.edu.in)

## Event Details

The session will be conducted through physical mode only. Venue for the programme is VLSI Laboratory, Department of ECE, Kamaraj College of Engineering and Technology (Autonomous), K. Vellakulam, Near Virudhunagar. Registration confirmation and event details will be sent to selected participants through mail.

## Registration Details

Maximum number of participants is limited to 50. Participant selection will be on first come first serve basis. No registration fee will be charged from the participants and they will be provided free course material and refreshments. Registration has to be done through ATAL portal.

<https://www.aicte-india.org/atal>

## Target Audience

Faculty members (Assistant Professors / Associate Professor / Ph.D., Scholars) of AICTE approved institutions are eligible to apply for the FDP.