INDUSTRIAL AND INSTITUTIONAL COLLABORATIONS

INTERNATIONAL
Agilent Technologies; Keysight Technologies, USA; Applied Nanostructures, USA; Femto CNRS France; Lockheed Martin USA; Maxim Semiconductors, USA; MEMS Cap, USA; Mitsubishi, Japan; NXP Semiconductors, Netherlands; ST Microelectronics, USA; University of Tokyo; Delft Institute of Microelectronics
University of Bath, UK

NATIONAL
Astra Microwave; Bharat Electronics Limited; Space Application Centre, Ahmedabad; Indian Navy; Central Electronics Limited; Defence Research and Development Organisation - (Defence Electronics Application Laboratory, Electronics & Radar Development Establishment, Research Centre Imarat, Naval Physical & Oceanographic Laboratory, Naval Science & Technological Laboratory, Defence Geoinformatics Research Establishment, Centre For Air Borne System); Computational Software for Intelligent System Design; Gallium Arsenide Enabling Technology Centre, Hyderabad; Honeywell, Bangalore

TECHNOLOGIES DEVELOPED IN LAST 10 YEARS

- High speed VLF communication modem.
- Acoustic vector sensors for air and underwater applications.
- Underwater acoustic communication modem.
- Multi-sensor data fusion algorithms and systems.
- Architecture and system for context-awareness of a mobile user
- Ensemble learning-based COVID-19 detection by feature boosting in chest X-ray images
- Multi-scale residual network for covid-19 diagnosis
- Powered Air Purifying Respirator (PAPR) System
- Low Cost Air Pollution Monitors - NBioT enabled with Prediction system
- 5G enabled smart stethoscope for Telemedicine
- Acoustic Emission Denoising and avalanche prediction system
- Sub-terahertz Near Field Material Characterization.
- Through the Wall Human Subject Localization and Respiration Rate Detection Using Multichannel Doppler Radar.
- 5 Bit DTML based Digital Phase Shifter.
- Inductor-Less CMOS RF Amplifier.
- Distributed Microwave Imaging.
- THz Electronic Devices: Modulators and Detectors
- Optical Sensors and Electronic Biosensors
- Bistable MEMS Switches: Non-Volatile Memory
- Metal Oxide (V2O5) Based MEMS Pirani Gauge for In-Situ Hermeticity Monitoring
- Nano Dimensional Piezoresistive Sensing Elements for Multiuse MEMS Sensor
- RF Circuit and Devices
- Wi-Fi signals and building high-density memory using spin torque technology

RECENT RECRUITERS

Microelectronics, Optoelectronics & THz Electronics

Microelectronics

5G and Beyond Communications

Signal Analysis, Algorithms and Hardware Systems

PLACEMENT STATISTICS (2019-2021)

Software 12%
RF 13%
Hardware Design 75%

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ABOUT THE CENTRE

The Centre for Applied Research in Electronics (CARE), established in 1971 focuses on research and manpower training in specialized areas of Electronics. At present, the Centre has 12 faculty including 2 Emeritus Professors working in 3 areas: Signal Processing, Microwaves, and Microelectronics.

The Centre has Ph.D. Program in these areas with 70+ research scholars enrolled presently.

WHY PHD AT CARE, IIT DELHI

- Publications in high impact international journals in respective fields.
- World-class laboratory facilities and cutting-edge hardware for advanced experiments
- Emphasis on industry-oriented and practical applied research work.
- IIT Delhi is highly ranked internationally in Electronics Engineering.

M.TECH. PROGRAMS

- The Centre has an M.Tech. Program in Radio Frequency Design and Technology (RFDT) since 2004.
- It has sanctioned strength of 44 students each year comprising of 24 Institute assistantships & 20 sponsored seats from Armed Forces and DRDO.
- The Centre also participates in the inter-disciplinary M.Tech. Program on VLSI Design Tools & Technology (VDTT).
- VDTT is an industry-sponsored M.Tech. Program in which GATE-qualified candidates are selected.
- It is a joint program of CARE, Computer Science, and Electrical Engineering Department.

KNOWLEDGE TRANSFER

- CARE organizes several workshops, seminars, invited talks, guest lectures.
- It hosts scientists from industrial and national research centres to facilitate the exchange of ideas & keep pace with current trends.
- The students of the Centre are also actively involved in the IEEE-MTTS, IEEE-OES IIT Delhi Student Branch Chapter.

STATE OF THE ART RESEARCH FACILITIES

- 110GHz Probe Station
- THz Network Analyser
- Cryogenic Probe Station
- ABM Mask Aligner
- Air Acoustics Chamber
- 3D Imaging Sonar test Set-up
- Under Water Tank

FACULTY PROFILE

Arun Kumar
Ph.D. (IIT Kanpur)
Professor
Digital Signal Processing, Underwater and Air acoustics, Human and machine speech communication Technologies, Multi-sensor data fusion, Signal Processing for IoT.

Ananjan Basu
Ph.D. (UCLA, USA)
Professor
Microwave & Millimetre Wave Engineering.

Mahesh P. Abegaonkar
Ph.D. (University of Pune)
Associate Professor
Microwave & Millimeter Wave Engineering.

Prabhu Babu
Ph.D. (Uppsala University, Sweden)
Associate Professor
Signal Processing & communications, machine Learning & Optimization.

Ankur Gupta
Ph.D. (IIT Bombay)
Assistant Professor
RF Microelectronics, Nanotechnology & Device circuit co-Design.

Rahul Mishra
Ph.D. (NUS, Singapore)
Assistant Professor
Nanoelectronics, Spintronics, Neuromorphic devices

Prof. S. K. Koul
Ph.D. (IIT Delhi)
Emeritus Professor
Microwave integrated circuits, CAD, Microwave phase shifters, Optical & Millimeter wave dielectric

Ulrich L. Rohde
Ph.D.(Clayton University, USA)
Honorary Professor
Microwave circuits, (Amplifiers, Oscillators & Mixers) & Frequency Synthesizers.

Vikram Kumar
Ph.D. (Lehigh Univ.
Honorary Professor
Semiconductor Physics & Technology.

HEAD OF THE CENTRE

Monika Aggarwal
Ph.D. (IIT Delhi)
Professor
Signal Processing & Communications.

Samarendra Das
Ph.D. (IIT Kharagpur)
Associate Professor
Nanoelectronics & Optoelectronics.

Pushparaj Singh
Ph.D. (NTU, Singapore)
Associate Professor

Kirti Dhvaj
Ph.D. (UCLA, USA)
Assistant Professor
Antenna systems.