Centre for Sensors, Instrumentation and Cyber Physical System Engineering (SeNSE)

Placement Brochure (2021-2022)

http://sense.iitd.ac.in
The Centre for Sensors, INstrumentation and Cyber-physical System Engineering (SeNSE) - formerly known as IDDC - offers an interdisciplinary M. Tech, MS(R) Course in Instrument Technology and Ph.D in specialized research areas combining multiple disciplines - microelectronics, optics, electronic circuits and mechanical engineering – to design and develop complete systems. In keeping with modern trends, industrial/societal expectations vis-a-vis the national goals, two more research areas - Sensors Technology and Cyber Physical Systems - have been included in its theme and the centre has been renamed as SeNSE. The Centre has made significant contribution through various sponsored R&D projects in developing Sensors/Systems for defense, medical and industry. It aims to achieve the national goals and foster excellence in state-of-the-art technologies. There are six core areas of focus - optical engineering, electronic system design, advanced optical fabrication, micro-opto-electro-mechanical systems, sensor technology and cyber-physical systems- across three application domains - defense, medical and industrial applications.

“The post graduate students of SeNSE contribute towards sponsored R&D activities via their Masters Thesis projects.”
- Prof. Satish Kumar Dubey
KEY SPONSORED, R&D PROJECTS

REAL TIME MONITORING FOR BIOMEDICAL APPLICATIONS

- Digital Holographic Microscopy for cellular diagnostics (SigTuple Technologies Pvt Ltd)

- Mobile communication to improve monitoring of heart disease and diabetes (UKIERI British council division)

- Development of opto-electronic sensor for Point of care diagnostic of micro-albumin in urine sample (AIIMS DELHI - IIT DELHI)

DSP AND COMMUNICATION

- Developing remote operation of anti-aircraft machine gun mounted on commander’s cupola tank (Army Technology board)

- Development project on design and development of automated radio relay link establishment system (Ministry of defense, India)

OPTICS

- Development of optical system based on Rayleigh scattering to artificially reproduce natural light and visual appearance of daylight (Havells India Pvt Ltd)

- Laser Induced Damage Threshold analysis of Different optical Materials and Sub-surface Damage on Microstructures.
KEY SPONSORED, R&D PROJECTS

MEASUREMENT AND MONITORING SYSTEM

- Laptop based test measurement and diagnostic equipment for field guns (Ministry of defense, India)
- Development of optical measurement techniques for slow land mass displacement to predict landslide (IITD-FIRP)

OPTICAL MEASUREMENT

- Digital topographic techniques for contouring of diffused objects and for measurement of temperature in gaseous flames (DST, Govt. of India)
- Swept source optical coherence scanning microscopy for 3d surface profilometry and tomography (DST, Govt. of India)

AUTOMATION APPLYING MECHANICAL PRINCIPLES

- Development and automation of ksharsuthra preparation (CCRAS, Ministry of Health)
- Design and development of digital speckle pattern interferometer for measurement and monitoring of Vibrations (Aeronautical R&D Board (Ministry of Defense))

DEFENSE

- Development of explosive detection system using surface enhanced Raman scattering (SERS) process (DST, Govt. Of India)
- Testing of micro-optics using digital holographic interferometry (DRDO, ministry of defense, India)
**ONGOING M.TECH PROJECTS**

**AUTOMATION APPLYING MECHANICAL PRINCIPLES**
- Pulse compression favourable-infrared imaging modalities for non-destructive testing and evaluation of solids
- Optical cavity Embedded Advanced Photonic Sensing Platform
- Nano-Positioning system (Piezo based positioning platform)
- Sensing and control of ventilator using LabView.

**VLSI & EMBEDDED SYSTEM**
- Design and Simulation of Reconfigurable MOSFET for Photodetection
- Characterization of CMOS chips at cryogenic temperature down to approx. 10 Kelvin.
- Use of sensors for voltage & frequency control in power systems.
- Designing smart garments using embedded system and IOT
- Modular data acquisition Instrumentation system

**OPTICS**
- LIDT analysis of Different optical Materials and Sub-surface Damage on Microstructures
- Surface Enhanced Raman Spectroscopy

**DIGITAL SIGNAL PROCESSING**
- Analysis and design of microphone arrays over spherical sector with application to source localization

**MACHINE LEARNING**
- Electro-Optic sensing and Machine Learning estimation of concentration of analytes
PAST RECRUITERS

BOSCH
HCL GROUP
LT
intel
Lam Research
John Deere

DRDO
NATIONAL INSTRUMENTS
Honeywell
IndianOil
ONGC

TOSHIBA
Leading Innovation

SIEMENS
Ingenuity for life

SAMSUNG
MAXLINEAR
Qualcomm

TATA MOTORS
TATA

MAXLINEAR
Qualcomm

Applied Materials
HITACHI
Inspire the Next

APPLE
BHEL

MathWorks
Hitachi

Reliance Industries Limited
Bharat Electronics

Cypress
EVM

TVS

Mediatek

Delta

Relaxo

Femic Technologies Inc.

Infineon

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