Department of Computer Science & Engineering

Indian Institute of Technology, Kanpur

Placement Brochure

Visit:
https://www.cse.iitk.ac.in/

Session
2024-2025

The Recuiter's Guide
Students' Placement Office

Department of Computer Science & Engineering

Indian Institute of Technology, Kanpur

Table of Contents

About Us

The Computer Science & Engineering Department at IIT Kanpur is the first department in India to start Computer Science education. The department started in August 1963 with an IBM 1620 system--a novelty then, even in many North American and European universities.

Today, many of the nation's leading experts, educationists, and consultants in computer science are alumni of this department. Currently, the department has a faculty of 34 whose interests span almost all areas of computer science.

The department runs BTech, MTech, MS(R), and Ph.D. programs and is known for its academic rigor, excellence, and cutting-edge research with several sponsored projects and consultancies. Some students convert their B.Tech. program into a dual degree program, which results in students getting both a B.Tech and an M.Tech. degree at the end of 5 years. The department has also started the M.S. program, which focuses on research in various domains of Computer Science.

Welcome Message

Prof. Surender Baswana
Head of Department

Computer Science & Engineering
Indian Institute of Technology, Kanpur

"I am proud to introduce the exceptional talent nurtured within our Computer Science and Engineering department. Our curriculum is meticulously designed to provide a strong foundation in computing while incorporating emerging and advanced topics. This ensures our students are always at the forefront of technological innovation.

Our graduates are not just engineers, they are visionaries and leaders, ready to make significant impacts in various industries. From core computing roles to positions in financial software, algorithmic trading, and E-commerce, our alumni are thriving and driving success in global companies. Additionally, many have ventured into entrepreneurship, founding and contributing to groundbreaking startups worldwide.

I invite you to visit our department and witness the unique, stimulating environment where your next top talent is being prepared for success. Our commitment to excellence guarantees that hiring from our department will bring unparalleled expertise and innovation to your organization."

Major Degree Programs

B.Tech
4 Year Program

Deep Study of number of engineering courses where students are introduced to core curriculum relevant to contemporary industries

BT-MT (Dual Degree)
5 Year Program

Both B.Tech and M.Tech degrees are awarded at the end of five years. Students are introduced to the core curriculum in bachelor's and then they contribute towards research for a year

M.Tech
2 Year Program

Comprises of rigorous coursework followed by a year of research. Courses often include advanced-level group projects and/or individual research project

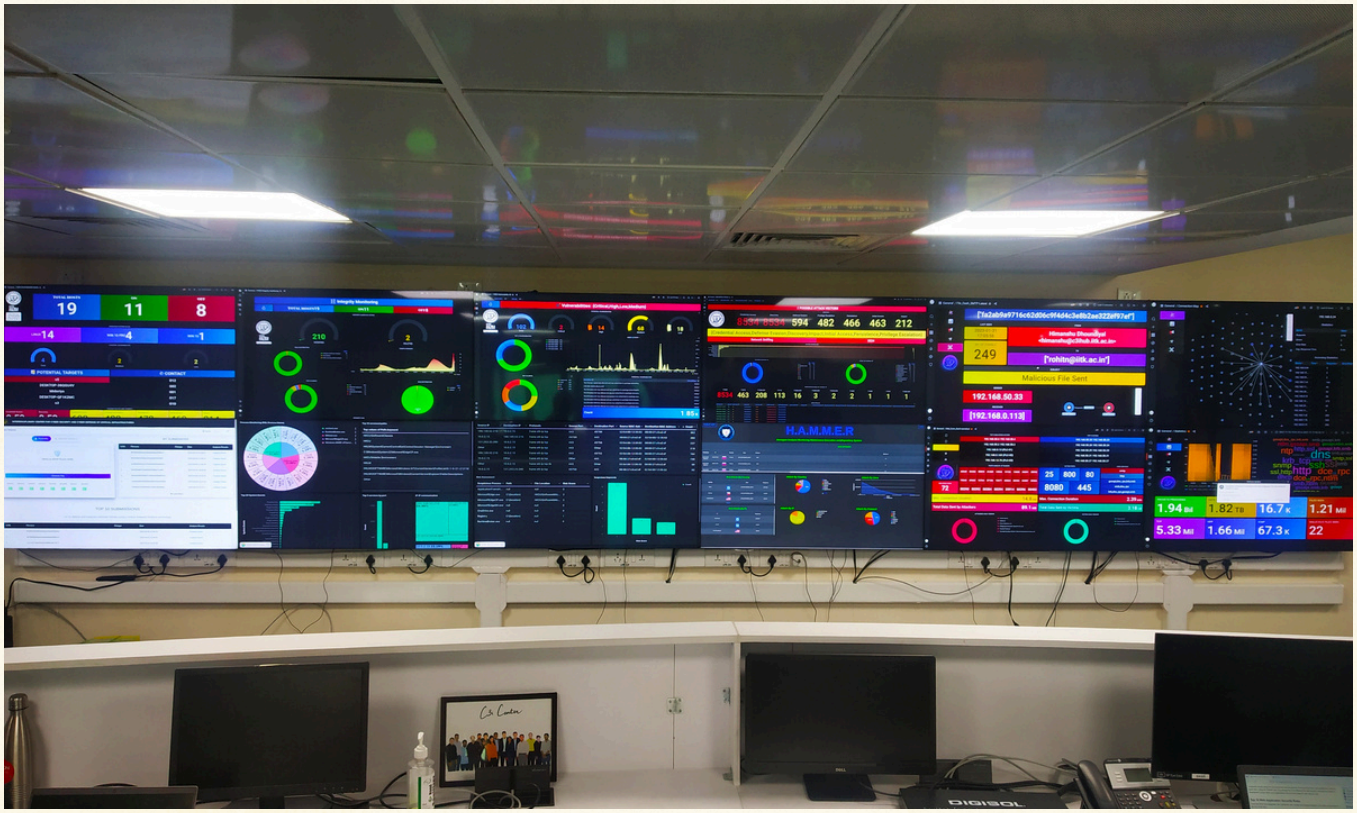
M.S. (By Research)
2-3 Year Program

Similar to M.Tech, with more emphasis on research. Involves fewer course credits and more research/thesis credits. Besides fundamental research, students work on many challenging industry oriented projects

Ph.D.
5 Year Program

Highest degree awarded by the department for students interested in research careers. Its focus, unlike other degrees, is more towards generating new knowledge than learning extant knowledge

Specialization in Cyber Security



The Department of Computer Science and Engineering at IIT Kanpur has been offering a good number of courses in Cyber Security related subjects for the last 5 years. Multiple faculty members in the department are engaged in research projects related to cyber security. Therefore, the department has offered three new master's programs specializing in Cyber Security.

The MTech program in Cyber Security is meant to cater to the students who are likely to take up jobs as VAPT engineers, security center analysts, CERT engineers, cyber security tool developers, etc. The MS by research program is designed to train cyber security researchers, technology developers, cyber security strategists, and top-level cybersecurity policy designers. Also, an option for BT-MT dual degree students is offered to specialize in Cyber Security.

Programs in Cyber Security

BT-MT (Dual Degree) in Cyber Security
5 Year Program

Similar to BT-MT, with major course credits from courses related to cyber-security

M.Tech in Cyber Security
2 Year Program

Similar to M.Tech, with major course credits from courses related to cyber-security

M.S. (By Research) in Cyber Security
2 Year Program

Similar to M.S., with major course credits from courses related to cyber-security

Lab Facilities

Network

The CSE lab is equipped with a 1 Gbps switched network with a tree topology. All systems (servers & clients) are equipped with 1 Gbps NICs. A CISCO Catalyst 3750G Series Layer-3 switch acts as a backbone switch. The lab is connected to the campus network through a router. The connectivity between CSE and the Institute Computer Center is through fiber optic cable. A total of 50 switches (24 ports each) each having 1 Gbps speed cover both CSE buildings. The department has two server rooms which are full of different kinds of servers. These server rooms also have specific project-based servers & systems

Cloud

Recently CSE lab has deployed one cloud "Vyomkesh" which has currently 20 compute nodes having dual Xeon 6 core CPUs with 48 GB RAM each. It supports 240 physical (480 logical) cores with 960 GB RAM.

Hardware Lab

The hardware lab in the CSE department is a state of the art lab equipped for embedded computing. The lab provides several FPGA-based stations for hardware programmability

Robotics Lab

Vicon Vero Motion Capture System for indoor robot localization has been installed in this Lab

Lab Facilities

SCADA Cyber Security Test Bed

A flexible SCADA test bed has been installed of Schneider-made industrial hardware and software to provide a facility for research scientists and engineers investigating cyber security of the critical infrastructure. This test bed replicates power distribution automation for both three-phase and single-phase power supply. This test bed is equipped with real field devices such as energy meters, protection relays, modular control system, IRIG-B-based GPS time sync unit, IEC-61850 compliant Ethernet switches, unified threat management hardware, industrial-grade HMI, SCADA system, etc.

Sun Grid

Sun Grid has been established in the department with funding from Sun Microsystems, USA. The grid has 20 workstations based on Opteron (64-bit AMD processor) and it is available to all the users who want to do research and explore the area of High Performance Technical Computing. The department is recognized as the "Sun Regional Academic and Research Partner for Excellence in Grid Computing".

CDIS

CDIS - The Center for Developing Intelligent Systems - is an R&D Center within IIT Kanpur dedicated to rapid development and prototyping of intelligent software systems, geared towards solving problems arising within the Indian ecosystem.

Lab Facilities

C3I Center

Cyber Security is no longer just a information security problem. It has become a national security problem due to increased use of digital control and communication in the functioning of critical infrastructures. For example, power grid, water and sewage system, nuclear plants, industrial control of manufacturing plants, railway signalling and track switch, air traffic control, rockets and missile control — all are done through digital sensing, and software based control. Network based data movement from sensors to control centres, substations, and load dispatch centres are examples of dependence of critical infrastructure on communication network. Nation states, terrorists, and organised criminals can launch cyber-attacks on such systems to debilitate a nation's infrastructure, cause large scale blackouts, manufacturing loss, train and air accidents or nuclear accidents.

SERB/DST funded the "Interdisciplinary Centre for Cyber Security and Cyber Defence of Critical Infrastructures" at IIT Kanpur to create India's first research centre whose mission is to do research, education, training, and to spawn start ups to create technological safe guards to protect critical infrastructure. The centre is building-India's first cyber security test bed for critical infrastructure similar to what is available at Idaho national labs, Sandia National Labs and NIST in the US. The researchers from our center in IIT Kanpur are discovering cyber threats to our critical infrastructure, developing solutions, and alerting the NCSC, and other government agencies on vulnerabilities in our critical infrastructure sector. The center is also training students on this topic and technologies who would be cyber security professionals in leading India's critical infrastructure utilities, and government agencies in the future. We are also planning to provide hands-on training to executives of utilities so that they can be aware of cyber security threats, and how to prevent such attacks.

The centre is also engaged with international partners from Israel, and USA in developing research and technology exchange, student training, as well as hosting conferences, workshops, and cyber security competitions to create awareness, student excitement in choosing cyber security profession, and to develop a world class academic research culture in the field of cyber security.

Faculty List and Expertise

Adithya Vadapalli

Applied Cryptography, Private Information retrieval, Secure Multi party computation, Zero-knowledge Proofs and Oblivious RAMs

Amey Karkare

Compilers, Functional Programming, Program Analysis & Code Optimization, Programming Languages and Education

Anil Seth

Logic, Theoretical Computer Science retrieval,

Ashutosh Modi

Natural Language Processing, Machine Learning and Affective Computing

Debapriya Basu Roy

Hardware Security, VLSI for Cryptography and Post Quantum Cryptography

Indranil Saha

Application of formal methods to embedded and cyberphysical systems and Robotics

Amitangshu Pal

Wireless and Sensor Networks, Sensing and Communication for Internet of Things (IoTs) and Building IoT Solutions for Smart Cities

Angshuman Karmakar

Post Quantum Cryptography, SideChannel attacks and Computation on encrypted data and Cryptology

Arnab Bhattacharya

Databases, Data Mining, Information Retrieval, Natural Language Processing and Artificial Intelligence

Debadatta Mishra

Operating Systems, Virtualization and Cloud Computing and Computer Networks

Hamim Zafar

Computational Biology, Machine Learning and Bioinformatics

Mainak Chaudhuri

Computer Hardware and Architecture

Faculty List and Expertise

Manindra Agrawal

Computational Complexity Theory, Security, Theoretical Computer Science and Algorithms

Nisheeth Srivastava

Human Factors in Computing, Computational Cognitive Science and Computational Social Science

Nitin Saxena

Computational Complexity Theory, Algebra, Algebraic Geometry, Theoretical Computer Science and Algorithms

Piyush Rai

Machine Learning and Bayesian Statistics

Preeti Malakar

High Performance Computing, Scalable Parallel Communication and Workflow Optimization

Priyanka Bagade

Internet of things, Sensors, Mobile Computing and Deep Learning

Purushottam Kar

Optimization, Statistical Learning Theory and Machine Learning

Raghunath Tewari

Computational Complexity Theory, Graph Theory, Theoretical Computer Science and Computational Geometry

Rajat Mittal

Computational Complexity and Quantum Computing and Semidefinite Programming

Rajat Moona

Computer Hardware and Architecture, VLSI Design, , Embedded Computing, VLSI Testing and Operating Systems

Sandeep Kumar Shukla

Application of formal methods to embedded and cyberphysical systems and Embedded Computing

Sanjeev Saxena

Parallel Processing, VLSI, Data Structures, Algorithms, Heuristics, Graph Theory and Computational Geometry

Faculty List and Expertise

Satyadev Nandakumar

Theoretical Computer Science, Algorithmic Information Theory and Computible Analysis

Soumya Dutta

High Performance Computing and Visualization, Visual Computing and Computer Vision, Big Data Visual Analytics

Sruti Srinivasa Ragavan

Human-Computer Interaction, Software Engineering, End-user Programming, Humanistic Aspects of Computation

Subhajit Roy

Formal Methods, Artificial Intelligence, Software Engineering, Programming Languages and Compiler Optimization

Sumit Ganguly

Databases, Data Streaming and Algorithms

Sunil Simon

Game Theory, Distributed Systems and Temporal Logics and Verification

Surender Baswana

Graph Algorithms, Dynamic Algorithms and Randomized Algorithms and Algorithms

Sutanu Gayen

Foundations of Machine Learning and Probabilistic Algorithms

Swarnendu Biswas

Programming Languages, Compilers, Program Analysis, Software systems and High Performance Computing

Urbi Chatterjee

Hardware Security, Physically Unclonable Functions, Secure Authentication Protocols Design and Internet of Things Security

Gunjan Kumar

Sublinear Algorithms, Approximation Algorithms, Statistical Learning Theory, Information Theory

Recent Research & Developments

Interdisciplinary Center For Cyber Security And Cyber Defence

DST has sanctioned 14.43 crores (~2.2 million USD) for the Interdisciplinary Center for Cyber Security and Cyber Defense of Critical Infrastructure. Prof. Sandeep Shukla and Prof. Manindra Agrawal will lead the group. This is the first center, set up in India, to pursue cyber security of critical infrastructure

JEE Seat Allocation : An Algorithmic Perspective

Prof. Surender Baswana proposed an algorithmic perspective for JEE seat allocation for CFTIs. This approach ensures each candidate submits a single choice list over all available programs and receives no more than a single seat from the system, based on the choices and the ranks in the relevant merit lists

Primality Testing In Polynomial Time

One of the major problems in computational number theory was solved by Prof. Manindra Agrawal, Neeraj Kayal, and Nitin Saxena The problem was whether a number could be tested for primality in polynomial time deterministically.

Identity Testing, Dependence Testing, Root Finding

One of the major problems in algebraic complexity is that of polynomial identity testing. A large number of special cases have been solved jointly by the research group of Prof. Nitin Saxena. The quest for a general solution is still on. The group also has famous complexity results in the related questions of algebraic dependence testing and finding roots of polynomials

Dev. Of National Air Quality Index (NAQI) For Indian Cities

The National Air Quality Index (NAQI) translates individual air pollutant concentrations into a single number that reflects the status of air quality in simple terms. The scientific basis of developing AQI is the attainment of air quality standards and pollutant dose-response relationships. This was developed by Prof. Arnab Bhattacharya.

Recent Research & Developments

MOOC And Agropedia Software Models

MOOCs provide affordable and flexible way to learn new skills, pursue lifelong interests and deliver quality educational experiences at scale. Agropedia, a software as a service model, can be used to rapidly build agriculture portals for different communities

Prutor : A Cloud Based Web Application

Prutor is a cloud-based web application that provides instant and useful feedback to students while solving programming problems. Prutor provides a view of the students' approach to solving programming problems, regardless of programming environments

Smart Card Technology Development

A standard for smart card operating system has been developed which is used by the government of India for all their smart card based applications. A smart card operating system has also been implemented which is compliant to this standard. This technology is in the process of being commercialized

Language Technology

Some path breaking contributions have been made in Indian language coding (ISCII), keyboard design, transliteration, OCR machine translation, Linux ware, NLP, Indian scripts on Linux, Web content creation and search. Some of our landmark achievement is : GIST multilingual technology, AGLABHARTI & ANUBHARTI MACHINE aided translation strategies and popular web sites such as Gitasupersite

Multipurpose Multimodal Human Identification System

The primary aim is to design a robust system which is capable of handling problems like security, personal, verification/identification etc. The various traits that are considered are Face, Iris, Signature, Fingerprints and Ear

Recent Research & Developments

Spacecraft Health Monitoring Platefrom for ISRO

An integrated web-based platform for performing data analytics, visualization, monitoring, and forecasting tasks with satellite telemetry data is being developed. This feature-rich web-based analytics portal aims to automate spacecraft health monitoring tasks for ISRO scientists and provide alerts about spacecraft health without significant manual intervention.

Medical Application

The medical applications group supported by media lab Asia developed a portable mobile model of printing healthcare delivery which uses ICT and digital devices to contact remotely located individuals requiring medical attention with doctors. The 'Sehat Saathi' software was one of the software for telemedicine.

Foundation Courses

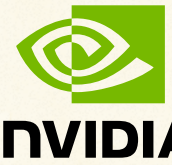
- Mathematics for Computer Science - I, II, III
- Fundamentals of Computing I, II
- Data Structures and Algorithms
- Computer Organisation, Computer Architecture
- Software Development and Operations
- Principles of Database Systems
- Operating Systems
- Compiler Design
- Principles of Programming Languages, Parallel Programming
- Theory of Computation
- Artificial Intelligence
- Computer Networks
- Computer Systems Security
- Sensing, Comm. and Networking for Smart Wireless Devices
- Introduction to Machine Learning

Advance Courses

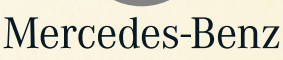
- Data Mining
- Modern Memory Systems
- Topics in Distributed Systems, Parallel Computing
- Program Analysis, Verification and Testing
- Statistical Natural Language Processing
- Deep Reinforcement Learning
- Introduction to Probability for Computer Science
- Analysis of Unconventional Programs
- Topics in Parallel Computing
- Probabilistic Machine Learning
- Cryptographic Techniques for Privacy Preservation
- Quantum Computing, Blockchain Technology and Application
- Programming for Performance
- Design and Analysis of Algorithms
- Multi-core and Multiprocessor Architecture
- Linux Kernel Programming

***A detailed list of courses can be found here**

Prominent Recruiters







Contact Us

Prof. Sutanu Gayen
Faculty Placement Coordinator

Email: sutanu@cse.iitk.ac.in

Prashant Kumar
Department Placement Coordinator

Email: prashantkr23@iitk.ac.in
Contact: (+91) 8416970886
LinkedIn: prashant-mishra

Shivam Mishra
Department Placement Coordinator

Email: shivammis23@iitk.ac.in
Contact: (+91) 8889700550
LinkedIn: shivam-mishra

Thank You