The Department
- Facilities
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Degree Programmes
- Undergraduate Degree Programme (B.tech.)
- Postgraduate Degree Programme

Faculty

Research Projects
Department of Computer Science and Engineering
Indian Institute of Technology, Kanpur

Indian Institute of Technology Kanpur was the first Institute in India to start Computer Science education. The initial "computer-related" courses were started at IIT Kanpur in August 1963 on an IBM 1620 system installed in the nation's first "computer classroom," a novelty then even in many North American and European universities. Gradually, the Institute drew upon some of the brightest young Indians in Computer Science to serve on its faculty and students every year. In the B.Tech programme and 50 students in the M.Tech programme, 30 students are admitted to the dual degree programme, which results in students getting both a B.Tech and an M.Tech degree at the end of 5 years. The number of PhD students currently is 15. Two software engineers supervise the labs and the server operations with the help of other staff members. Besides, there are a number of research engineers working in various sponsored projects.

Initiated an independent academic programme in 1971, leading to Ph.D. and M.Tech. degrees. The undergraduate programme started later, with the first batch graduating in 1983. The department was formally established in 1984. Many of the nation's leading experts, educators, and consultants in computer science today are alumni of this department. Currently, the department has a faculty of 21 whose interests span almost all areas of Computer Science.

The department admits about 40

Facilities:

Laboratory

CSE Lab is equipped with 100 mbps switched network. All systems (servers & clients) are equipped with 1G/100 mbps Ethernet cards. CISCO Catalyst 2900 switch is acting as back bone switch. It is a tree topology network. Through one Linux router this lab is connected to rest of IFK fiber backbone and Internet. Eight wireless access points (254 Mbps) are placed in the building to serve wireless needs.

The CSE Lab provides NFS, SMTP mail, DNS, DHCP, NIS(NYP), MySQL database server, Tomcat servlet runner, FTP server, Intranet website, Internet website, NTP services.

One dual Xeon Linux server provides SMTP mail service. This server also provides IMAP & POP3/SSL services. Another system with similar hardware & software configuration is acting as backup server for this mail server.

Mail box backup is available for last 12 hours.

Two Xeon Linux servers provide NFS service for all CSE Lab users.

Most of the CSE-Lab clients are dual boot systems. These systems are using DHCP for fixed IP allocation. Currently, clients are running Fedora core 2 (Mandrake 10 & Windows 2000) with SUSE, Suseen SUN, Sun Workstations having Solaris 8 are also being used in the Lab. 12 Sunray clients are also in the lab loaded with Solaris 9.

CSE-Lab is fully air conditioned & UPS protected with 60 minute backup for lab client systems and 2 hour backup for all server systems and room PCs.

Daily automatic backup is for user's home directory. It is available for last 30 days.

Monthly backup available for last three months.

The department also draws upon the computing resources available at the Institute's Computer Centre.

Library

The department has a small library, which has all the important text books, conference proceedings, and journals. This is besides the well-equipped Central Library.
Prabhu Goel Research Centre for Computer & Internet Security
Research Activities

The department is actively involved in research in various fields of Computer Science. The domains of research range from abstract theory to down-to-earth problems of immediate interest of the Industry. Some specific examples of the same are the following:

Theoretical Computer Science: One of the major outstanding problems in the area of computational number theory was solved by one of our faculty members in 2003. The problem pertained to whether a number could be tested for primality in polynomial time. This is considered the most important research result in the last 15 years in the area of Theoretical Computer Science.

Smart Card Technology Development: A standard for smart card operating system has been developed which is used by the Government of India for all its 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.

Computer System Security: Recently, Prabhu Goel, Co-founder of Computer and Internet Security has set up a joint venture in the department. The center aims to promote research in all aspects of computer security. The Department has already made several contributions in this area including designing of new private key cryptosystems, packet filtering systems, etc.

Language technology: Development of Indian Language technology has been one of our major activities. Some path-breaking contributions have been made in Indian Language Coding (ISOCIS), keyboard design, transcription, OCR, machine translation, Linuxware, NILP, Indian scripts on Linux, web content creation and search. Some of our landmark achievements are: OIST Multilingual technology, ANGABHARTI & ANJABHARTI; machine-aided translation strategies and popular web sites such as Gita software. First version of Anga Hindi, an unconstrained machine-aided translation system from English to Hindi based on Angabharti approach has been released and the technology has been transferred to the industry. Anga Hindi is available on web at http://angahindi.lilk.ac.in.

The areas in which research is being pursued in the department may broadly be classified into the following categories:

- Database And Data Streaming
- Mobile/Wireless, Computer Networks
- Computer Architecture And Embedded Computing Security
- Compiler And Programming Languages
- Natural Language Processing
- Theoretical Computer Science
- Discovery, Learning, And Cognition
- Software Engineering
- Algorithms

Faculty Members

**Research Areas**

- **Data Mining & Big Data Analytics**
  - Saroj G. Dhende, Anibabha Mukherjee
  - Auj Jain, Shashank Mehta, Rajat Mohan

- **Embedded Systems**
  - R K Ghosh, Shashank Mehta, Sanjeev Saxena

- **Computer Vision**
  - Rajat Mohan
  - Sanjeev K Aggarwal, R K Ghosh

- **Software Engineering**
  - Pratik Gandhi, Pratik Gandhi, R M Sinha

- **Artificial Intelligence**
  - I P Mohan, Hanumant Karmick

- **Database And Data Streaming**
  - Anibabha Mukherjee, Kritika Venkataramani

- **Mobile/Wireless, Computer Networks**
  - R K Ghosh, Dheeraj Sanyal, Pratik Gandhi

- **Computer Architecture And Embedded Computing Security**
  - Mani Agarwal, Dheeraj Sanyal, Sanjeev K Aggarwal

- **Compiler And Programming Languages**
  - Mani Agarwal, Somnath Biswas, Anil Seth, Harsh Karmick, Sathya S Harikumar

- **Natural Language Processing**
  - Harsh Karmick, R M Sinha, Anibabha Mukherjee

- **Theoretical Computer Science**
  - Mani Agarwal, Pratik Gandhi, Sanjeev Saxena, Ratan K Ghosh, Shashank Mehta, Sumeet Saxena

- **Discovery, Learning, And Cognition**
  - Mani Agarwal, Pratik Gandhi, Sanjeev Saxena

- **Software Engineering**
  - R K Ghosh, Dheeraj Sanyal, Pratik Gandhi

- **Algorithms**
  - Saroj G. Dhende, Anibabha Mukherjee
  - Auj Jain, Shashank Mehta, Rajat Mohan

- **Artificial Intelligence**
  - Rajat Mohan
  - Sanjeev K Aggarwal, R K Ghosh

- **Software Engineering**
  - Pratik Gandhi, R M Sinha

- **Artificial Intelligence**
  - I P Mohan, Hanumant Karmick

- **Database And Data Streaming**
  - Anibabha Mukherjee, Kritika Venkataramani
Prabhu Goel Research Centre for Computer and Internet Security is a nodal R&D centre in the country for all aspects of computer and Internet security. The centre was inaugurated on June 3, 2003 by Dr. Vidyasegar, Executive Vice President, Advanced Technology Centre, TCS Hyderabad. The charter of the centre is to help and educate various governmental and non-governmental organizations on security issues. The centre undertakes research, training and consulting activities, and collaborates with defense and security agencies in developing various security technologies. In the last five years of its establishment, the centre has produced 3 PhD theses, about 20 Mtech theses and has published about 25 research papers.

The Prabhu Goel Research Centre at IIT Kanpur was established by Dr. Prabhu Goel, an alumnus of IIT Kanpur. Dr. Prabhu Goel is an active philanthropist and a highly successful private venture investor. He has founded several companies including Gateway (Design Automation (acquired by Cadence)), Frontline Design Automation (acquired by Avant Corporation), Policy Networks etc.

The centre is presently headed by Dr. Rupal Moona, Professor in Department of CS. Several faculty members and students at the institute contribute towards the goals of the centre through their research and other academic activities.

In order to increase the security awareness, the centre holds short term training courses. The centre has conducted several intensive training courses on computer security and undertaken consulting activities for design of security policies, networks and other secure information systems. The centre carries out the following activities:

- Academic courses for undergraduate and postgraduate programs
- Short term courses for industry and other organizations
- Postgraduate thesis work and undergraduate project work
- Workshops and conferences in the area of data security
- Various research projects
- Interactions with researchers in the area of security

Some of the currently undergoing significant research projects from the centre are the following.

**TransCrypt**

TransCrypt is an enterprise-class encrypting file system. It uses strong cryptographic methods to protect your data against theft. TransCrypt is completely transparent — no changes to existing applications are required.

TransCrypt is an enterprise-class encrypting file system. It uses strong cryptographic methods to protect your data against theft. TransCrypt is completely transparent — no changes to existing applications are required. TransCrypt is an easy-to-use system that implements file sharing via the


enough to accommodate various degrees of security depending on each requirement and has a scalable design. A major feature of TransCrypt security architecture is that even a supervisor is not trusted in the threat model.

**SCOSTA**

SCOSTA is a smart card operating system standard developed by the researchers at the centre in association with National Informatics Centre (NIC). It is being used for various governmental applications including e-Passport, National ID, Driving license, Vehicle registration, Health Card, I card etc.

**Electronic Passport**

The Indian electronic passport is equipped with an electronic chip and an embedded antenna to interface in a contactless manner with the passport readers. The electronic chip runs an Operating System program which is a home grown standard known as SCOSTA-C1. It is implemented by several reputed companies.

The SCOSTA-C1 standard is compliant to International Civil Aviation Organization (ICAO) specified standard for reading passports across the world. However the Indian Passport standard goes one step ahead and defines the standard of interoperability even while personalizing the passports in the passport offices across the country and millions abroad. This permits the links with embedded chip and antenna to be procured by the manufacturers across the world without any further implication of security than what is required for a transpassport booklet.

**Biometric Standard**

With the spread of electronic processing and communication, a number of applications based on “paper” are being moved to electronic format to improve the speed of transactions and ease of use. However, this transformation comes with its own set of issues, one of the most important being security. Therefore, in many applications, biometric data of the user is required to validate the identity of the user.

There are a number of companies that offer proprietary, non-interoperable biometric solutions, such solutions are undesirable since using them binds one down to a single company forever. For this reason, the Government (through NIC) has constituted a committee headed by researchers from the Centre to create open standards for biometric data usage in e-governance.
RESEARCH | FOUNDATION
Research Foundation

One of our alumni, Mr. N. R. Narayana Murthy, Chief Mentor, Infosys, has created the Research Foundation for the department with an endowment of Rspees ten crores. The aim of Research Foundation is to foster research in the department. For this purpose, the foundation funds several types of research activities including:

- Visits of the department faculty members to the best research groups in the world for a period of up to six months.
- Visits of internationally renowned researchers to the department for a period of up to six months.
- Full travel support to present papers in any of the top conferences in the broad computer science and engineering area.
- Research grants for a period of 2-3 years against proposals submitted by the faculty members of the department. This also includes an additional salary of Rs one lakh per year.
- Support for the young faculty in the form of “Research Fellowships” for a duration of three years that includes a research grant of Rs three lakhs and a salary component of Rs 1.2 lakhs per annum.
- Full support for up to two workshops every year in cutting edge areas.
- Hari Sahasrabuddhe lecture series on Reflections in Computing that has pioneering leaders in the computer science and engineering giving talks at IIT and a city in southern part of India.
- Fellowship to PhD students up to Rs 20,000 per month.
- Visits by PhD students for a semester to leading research groups around the world.

The details of the activities of the foundation can be found at http://www.cse.iitk.ac.in/rtf/.

TCS (Tata Consultancy Services) has set up a foundation for promoting research in algorithms in the country starting this year. Amongst the activities to be supported by the foundation are:

- Annual workshop that brings all the researchers in the algorithms and theory area in the country to one location for a week. The first workshop was held recently at Tirunelveli.
- Support for organizing focused workshops in different sub-areas.
- Support for inviting researchers by an individual or a group.

Degree Programmes

IT (Kpuram Computer Science and Engg. Department) offers four degree programmes, namely:

- B.Tech. (Undergraduate)
- Dual B.Tech-M.Tech
- M.Tech.
- PhD.

Bachelor of Technology (B.Tech) Program

The department has one of the best undergraduate programs in the country. The course curriculum for the undergraduate programme gives the flexibility to the students to prepare for advanced specializations. The department commits to offer a set of electives so that students can plan their academic programme in advance. The course structure provides a right mix of compulsory and elective courses.

Requirements

The undergraduate programme is of four-year duration. The Senate Undergraduate Committee (SUGC) handles all the matters pertaining to the programme. The department has its own Undergraduate Committee (DUGC) which advises students regarding course registration and it also monitors the performance of each student closely. The deficient students are advised appropriately to enable them to cope up with the requirements for the degree.
Academic Session
The academic session normally begins in the fourth week of July every year and ends in the middle of July. It consists of three terms:
- First Semester: July last week – November last week;
- Second Semester: December last week – April last week; and
- Summer Term: the middle of May – the middle of July.

Curriculum
The B Tech Programme is divided into two distinct parts. A student has to go through a common programme called Core Curriculum. Most of the core curriculum is completed in the first year. The second and third semesters has a large number of professional courses, that initiates the student to topics in Computer Science and Engineering.

The Core Curriculum consists of a package of compulsory courses in Physics, Chemistry, Mathematics, Engineering Sciences and Technical Arts. It also includes several electives in Humanities and Social Sciences, Management, Business, Basic Sciences. The curriculum also includes open electives, where student can take the course from any department in the Institute. Through these electives, students can tailor-made their programs to suit their interests and needs.

The Professional Curriculum consists of courses and Project Work. There are some compulsory courses, but there is a significant number of professional electives as well. Three professional courses are done during the first two years itself.

Admission
Admission into B Tech programme is made once a year in July through a Joint Entrance Exam (JEE) conducted on an All India Level in the first week of May. The admissions are offered on the basis of candidates All India Rank in JEE.

Dual Degree (BTech/MTech) Programme
Summary
In the proposed program, the students will be admitted through JEE, and are expected to take 5 years to complete, both of degree's B Tech, for those students who do not meet the academic requirements for the award of M.Tech, degree, be awarded at the end of 5 years or whenever the requirements have been completed hereafter.

Similar programs are already in place in various departments at IIT Bombay, IIT Delhi, IIT Guwahati, and IIT Roorkee. All these research institutes have a dual-degree programme in Computer Science & Engineering. Several universities abroad, including MIT also have started similar programs in Computer Science and other disciplines.

Motivation
The need for this program has been felt in recent years with declining strength of PG programs. With the boom in economy, the salaries for engineers, particularly in the area of computer science, have skyrocketed, and are many times the M Tech stipend. Furthermore, the industry observes that there is a shortage in software industry for software engineers have started hiring most of the graduates from institutions that traditionally provided inputs for M Tech program.

The situation implies that it is unlikely that we will be able to attract good students in required numbers to our M Tech or PhD programs. For similar reasons, it is also very unlikely that we can attract reasonable quality graduates to work for us as research engineers, the hallmark of this is that in Computer Science, with the current setup, we will have little research manpower.

The proposed programme has been designed to make it attractive for a good student to do an M Tech. and thus contribute to the research efforts of the department. The student benefits by getting an M Tech degree with just one year of extra effort, thereby saving at least six months. The programme is slowly increasing in popularity as can be judged by an increasing number of IIT students opting to shift to this programme.

Good quality M Tech students are also expected to give a good to undergraduate education, since they can help undergraduates in labs, and interact with them as teaching assistants.

Curriculum
The curriculum for the dual-degree programme is roughly same as the combined requirements of the B Tech and M Tech curriculum. All requirements such as core courses, FGS, EPGC etc. will be adhered to. Since there is a reduction of six months in the time, a small amount of reduction from the combined requirements (mainly BTP requirement) is proposed. This is consistent with the generic course structure approved by the Senate for dual-degree programs. There is one small change we are proposing here. In the summer term after the fifth semester, we are proposing an option between the thesis units and the summer training. This will be used to spread the research work on four semesters. The exposure will be good for the student. The thesis supervisor and DPGC will decide whether a particular place for summer training is appropriate from the thesis point of view, and whether the student should be permitted to proceed on summer training or stay at IIT and work on thesis here itself.

Master of Technology (MTech) Programme
MTech degree programme exposes students to a wide range of courses, coursework to specialized research which culminates in a thesis. Such a combination gives students the breadth and depth necessary for pursuing careers in academics as well as industry.

Requirements
Duration of the Programme
The residence requirements for MTech programme is four semesters. However, it is possible to get permission to spend one semester elsewhere. If someone wants to carry out the thesis work in a company, or at some other educational institution. It is allowed by the Institute. For example, we participate in an exchange programme with a few German
Universities in which the students can spend a semester in Germany. The maximum time one can spend in the MiTech programme is four years.

We also have a part-time MiTech programme for working professionals. These students will register for six semesters. It is possible to convert one's status from full-time to part-time and vice-versa.

Curriculum
The Institute requirement for MiTech programme is completion of 64 units of load of which at least 24 units shall be through course work and at least 32 units through the MiTech thesis. A typical course is considered to be 4 units. The elective courses are left to choice of the student, but they must be postgraduate courses offered by Computer Science Department. (Every semester, we do publish a list of courses offered by other departments, mostly Electrical & Math, which we treat as being equivalent to PG courses in CSE.) To give some flexibility to the students, at least one elective can be chosen from Computer Science undergraduate course (like Computer Networks, Software Engineering etc.), or a post-graduate course offered by other departments in the Institute. A large number of electives are offered in each semester, the actual courses offered will depend on availability of faculty members in a particular semester.

Eligibility for Admission
Admissions to the MiTech programme in the Department of CSE are normally made in the semester starting from July each year. The admission process typically starts some time in April. No admissions are made to the MiTech programme in the semester starting from January.

The minimum eligibility conditions for admission to the MiTech programme are given below.

The candidate should have secured a minimum of 55 percent marks or a CPI (Cumulative Performance Index) of 5.5 (on a 10,0 scale) in the qualifying examination.

The applicant must have a Bachelors degree in Engineering or Masters in Science. The applicant must have a sufficient background in Computer Science to complete the degree requirements with reasonable performance, the candidate must have a valid GATE score.

We strongly prefer that the GATE score be in Computer Science. GATE score in Information Technology is also acceptable. In rare cases, we may call those candidates for test/interview, who have appeared in GATE in EE, EC, or Maths, and have an exceptionally high score. Those with GATE in these other subjects must have gained some Computer Science background, and it should be clear from their application. (For example, they might have experience in software development. Or they might have done several computer science courses as electives while they were doing their B Tech/BE courses.) However, please note that in the last few years, we have not called any such candidate for test/interview.

Admission Procedure
In the department of computer science and engineering, admission must be for the MiTech Programme is a two step one. The candidates are invited to the written test and Interview on the basis of their performance in GATE. A few candidates with exceptionally high GATE score in CSE are offered direct admission (that is, without going through test/interview). The admission process for those candidates invited to the written test and interview is purely based on their performance in test and interview. GATE score is not considered for admission beyond issuing a call for test/interview.

Some candidates with lower GATE score but with other achievements such as publications, industrial experience of at least two years may also be invited for the interview and written test. The written test consists of questions from basic computer science courses as well as some questions to test the analytical abilities and aptitude of the candidates.

Financial Assistance
Non-sponsored candidates admitted to the regular full-time MiTech Programme who are Indian Nationals are eligible for financial assistance as follows:

- TA/SA ship: Candidates admitted to the MiTech programme after gaining TA/SA-GATE will be offered a Teaching Assistance (TA) or Research Assistance (RA) provided they have secured at least 60 percent marks (55 percent for SC/ST candidates) in their qualifying degree examination. A teaching assistant can be asked to conduct labs, help an instructor in grading, and other course-related tasks. In some cases, RA can also be asked to teach tutorial sessions to the first year B Tech students.

A research assistant can be asked to support the department in various
academic activities. It could be providing help in maintaining and upgrading department labs, downloading, installing software, etc. An RA can also be assigned to faculty members to help them in their research effort. Currently, the assistance amount is Rs. 8,000 per month. It also gives 30% waiver in tuition fee.

Project Assistantship: Several faculty members are working on sponsored projects supported by government funding agencies such as MHRD, DRDO, DST, AICTE, etc. Some projects are also funded by Industry. An Mtech student can be hired as a project employee to carry out research. The assistance amount in such cases can be between Rs. 8,000 and Rs. 15,000 per month. No student can draw more than one scholarship/assistance at a time.

Doctor of Philosophy (PhD) Programme

The department is actively involved in research in all current areas of Computer Science. The focus of the PhD programme is on research training with a high degree of specialization. The aim of such a training is to make our PhD students very competent in their respective areas, so that they may be able to take up teaching or research-and-development positions.

Requirements

Duration of the Programme

The residence requirement for PhD programme is four or six semesters depending on whether the student has M.Tech. or B.Tech., respectively.

Course Requirement

For PhD students who have an M.Tech. degree, the minimum requirement is that of 34 units, out of which at least 18 units should be through regular postgraduate courses and at least 12 units should be through research. In case of PhD students holding a B.Tech. degree, the minimum requirement is that of 46 units, out of which 32 units should be through regular postgraduate courses and at least 12 units should be through research. A typical course is considered to be 4 units. All the courses in the PhD programme are electives.

Areas of Research

The department has faculty members in all areas of Computer Science & Engineering. Active research is currently being carried out in the areas of VLSI design, computer architecture, soft computing, fault-tolerance, compilers, database systems, multimedia systems, operating systems, computer networks, Internet technologies, distributed computing, computer graphics and animation, CAD, algorithms, complexity theory, and artificial intelligence, etc.

What a PhD student can expect?

The department of Computer Science & Engineering at IIT Kanpur has always been a very open and supportive department for our students, and particularly so for the PhD students. There is a relaxed, friendly atmosphere, where faculty and students mix freely.

PhD students are respected as much as any faculty member. They have their own dedicated office space, furniture, etc. with a telephone. Each student is provided a laptop. They get office support for photocopying, laser printing, mailing, stationary, etc. They have a say in deciding the books and journals to be bought by the library. The fellowship of a PhD student is at least Rs. 15,000 per month (more details below). The department provides them travel support to attend conferences as well as support to spend at least one semester in any university anywhere in the world for working on their thesis.

Financial Assistance

Non-sponsored candidates admitted to the regular full-time PhD Programme who are Indian Nationals are eligible for financial assistance as follows:

- TARA: Candidates admitted to the PhD programme and satisfying some conditions like either holding M.Tech. degree or having a valid GATE score, minimum marks in qualifying degree examination, etc.) will be offered the Teaching Assistantship (TA) or Research Assistantship.
- A teaching assistant can be asked to conduct labs, help in instructing in grading, and other coursework-related tasks. In some cases, TA can also be asked to teach tutorial sessions to the first year Btech students.
- A research assistant can be asked to support the department in various academic activities. An RA can also be assigned to faculty members to help them in their research effort.
- The assistantship amount depends on whether the candidate has a B.Tech. degree or an M.Tech. degree. The assistantship after M.Tech. is Rs. 15,000 per month. Depending on the performance and credentials of the student, his assistantship can go up to Rs. 25,000 per month.

Industry Fellowships: Several companies are supporting PhD students by providing them with a fellowship. The amount in these cases is at least Rs. 20,000 per month.

Infosys Technologies has set up two Infosys Fellowships for PhD students in the department. Del Norsie Verus (DV) has setup one DVN Fellowship for PhD students in the department. Current full time Bangladeshi has setup Bell Labs Fellowship for PhD students in the field of networking in the department.
Dr. Mahak Chaudhuri received Ph.D. and M.S. in electrical and computer engineering from Cornell University in 2004 and 2001, respectively, and a Bachelor of Technology in electronics and electrical communication engineering from Indian Institute of Technology, Kharagpur in 1999. His primary research interest is in the general area of parallel computer architecture. His current research effort is concentrated on the design of large shared caches in the emerging chip-multiprocessors. Some of his recent and relevant publications are included below for reference. For more information please visit http://www.cs.illinois.edu/~mahakc.

Selected Publications


Anil Seth
Associate Professor
Email: anil@cs.illinois.edu
Research Interests: Logic in Computer Science, Automata Theory and Games

Prof. Anil Seth joined the faculty of this department in 2001. He did his Ph.D. in computer science from Tata Institute of Fundamental Research, Bombay in 1994. Prior to joining IIT Kanpur, he was a faculty member in TCS group at Institute of Mathematical Sciences, Chennai for seven years.

Selected Publications

Anil Seth, “There is No Recursive Automatization for Feasible Functions of Type 2”. In the proceedings of the 7th Annual IEEE Symposium on Logic in Computer Science, 1992.


Professor Amrita Mukherjee joined this department in 2000. He has his PhD in mechanical engineering and computer science from the University of Rochester in 1996. Before joining the department, he was on the faculty of Texas A&M University. He is also involved with the center of robotics at MTM, and he is a member of the editorial board of the Journal of Spatial Computation published by Kluwer academic. He has also provided consultancy for various projects in industries like S L TECO, Adobo MAL. For his outstanding contributions and achievements in the field of electronics, informatics, telecommunications, and automation, he received the Veer Saraswati Award in 1999. He also conducts the program Build Robotics Creede Science SRICS program Plan for Hands-on learning in schools.

Selected Publications

Sanjeev Saxena
Professor
Email: sanjek@csit.bits-pilani.ac.in

Research Interest: Design and analysis of algorithms (including parallel algorithms), data structures, graph theory, computational geometry.

Prof. Sanjeev Saxena joined the faculty of the department in 1988 and is currently a Professor in the Department of Computer Science & Engineering. He did his education, B.E., M.Tech. and Ph.D. at IIT, Delhi. He has multiple research interests include parallel processing, VLSI data structures, algorithms and heuristics. Dr. Sanjeev Saxena is interested in efficiently solving problems and has concentrated on fundamental problems of interest to computer scientists and engineers. These problems are in areas like sorting, VLSI data design, computational geometry, graph theory and combinatorics.

Selected Publications
- K.N. Babu and S. Saxena, Parallel Algorithms for the Longest Common Subsequence Problem, Proceedings of 4th International Conference on
Selected Publications

- Workflow composition, scheduling and Power aware application development for Grids.
- Distributed debuggers
- Code Optimization and Application development for multi-core architectures and CPU processors
- Parallelization in presence of irregular data distribution
- From specifications to code compliance checkers

Sanjeev K. Aggarwal
Professor
Email: san@csie.ilt.ac.in

Research Interest: Grid Computing, High Performance Computing, Compilers for High Performance Architectures, and Application of Language Processing Technology in Tools of Software Engineering

Professor R. K. Ghosh joined the faculty of this department in 1985. He received his Ph. D from Indian Institute of Technology Roorkee in 1982. He has nearly 25 years of research and teaching experience in the general area of distributed and parallel computing, wireless sensor networks and mobile computing. He has worked as a Professor in the department of Computer Science and Engineering at the Indian Institute of Technology, Guwahati during 2001 - 2005. He has also held positions of visiting research scientist at INSA-Sophia Antipolis, visiting UK School at IISc, and a visiting faculty in the Department of Computer Science at the University of Texas at Arlington. He has published extensively in international forums that include well known professional journals and conferences. Professionally he has

Ratan Kumar Ghosh
Professor
Email: zana@csie.ilt.ac.in

Research Interest: Distributed computing, mobile computing, sensor and wireless networks, parallel algorithms, parallel Processing, genetic Algorithms.

Selected Publications


Surinder Baswana
Assistant professor
Email: sbaswana@cse.iitk.ac.in

Research Interests: Design and analysis of algorithms

Selected Publications


Prabhakar T.K.
Professor
Email: tgp@cse.iitk.ac.in

Research Interests: Software Architecture, Knowledge Modeling, Web 2.0 and Indian Language Content

Selected Publications

- Professor T.K. Prabhakar did his PhD from IIT Kanpur. He is interested in building systems and is still excited about science and technology. He has worked in multiple areas like Databases, Logic Programming, User Interface Design, Internet Technologies, Software Architecture, Knowledge Modeling, Indian Language Technologies. He has worked with CMC, IBM, Indian Computer Services and has been a consultant to a large number of IT organizations and e-government initiatives. His hobbies are bird watching, and playing with his 6-year-old daughter. He has been with IIT Kanpur since 1986.

Knowledge Models of Software Architecture
See http://www.cse.iitk.ac.in/users/tgp_arch/www/archaware/ for some more related work.

Agropedia — a knowledge base for Indian Agriculture content
See http://www.agropedia.net

Indian Language Content
See http://www.glishauspise site.iitk.ac.in/ to explore.

OPALS
Please go to http://www.opals.org to know more

Other problems
Architecture training
I have been conducting short courses for the industry on Software architecture and design. The course has a unique content - it provides a knowledge model for software architecture