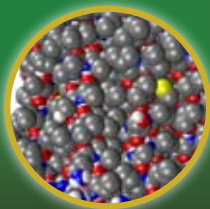
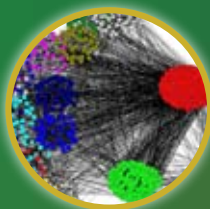
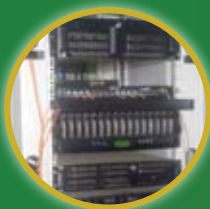




Department of Computer Science and Automation

Indian Institute of Science, Bangalore



<http://www.csa.iisc.ernet.in>



CSA@IISc

The Department of Computer Science and Automation (CSA) was created in 1969 and ever since its inception, the department has been a pioneering academic centre for higher education, research, and innovation in core and key areas of computer science. *The vision of the department is to enable India's excellence in the world of computer science and engineering and the driving mission is to advance the frontiers of research in computer science and offer world-class pedagogical and research experience to its students.* CSA is recognized as a Centre for Advanced Study by the University Grants Commission and has been awarded a FIST (Fund for Infrastructure in Science and Technology) grant by the Department of Science and Technology, Government of India. The department is ranked among the top 100 computer science departments in the world in terms of its publication profile and citations accumulated by the publications (Source: Academic Ranking of World Universities, ARWU, August 2012).

CSA researchers contribute to cutting-edge research in topical areas of computer science and are actively engaged in high impact collaborative projects. The faculty members have received numerous awards in recognition of their excellence in research, including the IEEE Fellowship, Fellowships of National Academies, Shantiswarup Bhatnagar Award, J.C. Bose National Fellowship, Swarnajayanti Fellowship, Faculty Awards from global R&D companies, Young Scientist Awards, and Best Paper Awards.

The department attracts talented students from all over India. There are currently 96 Ph.D. students on roll. All graduates of CSA find excellent placements in research-oriented industries, top ranking global companies, and as faculty in prominent national institutes and universities.

CSA alumni are at the forefront of research and development in computer science and related fields within India and internationally. The department's alumni include renowned academicians, leaders in computer and IT industry, distinguished scientists, and trendsetting entrepreneurs.

Research@CSA

Research is the primary activity and focus of the department. Faculty members are active researchers in their respective domains of expertise and lead various projects within the department. In addition, faculty members often work in collaboration with researchers from other groups and departments on interdisciplinary projects. CSA faculty members are active members of institute-wide interdisciplinary research efforts like the IISc Mathematical Initiative (IMI), the DST Centre for Mathematical Biology, the Computational Neuroscience program, the Centre for Infrastructure, Sustainable Transportation and Urban Planning (CiSTUP), and the Robert Bosch Centre for Cyber-Physical Systems (RBS-CPS). Research within CSA can be broadly grouped into three clusters. The clusters and the research topics follow.

Theoretical Computer Science: Algorithms, complexity theory, graph theory, algorithmic algebra, automata theory, combinatorial geometry, computational geometry, computational topology, coding theory, cryptography, logic, formal verification, computational biology.

Computer Systems and Software: Computer architecture, multi-core systems and programming, parallelization, embedded systems, energy aware computing, operating systems, storage systems, database systems, distributed computing, cloud computing, systems security, mobile and wireless systems, cyber-physical systems, performance modeling, graphics, visualization, Programming languages, compilers, program analysis, software engineering.

Intelligent Systems: Pattern recognition, machine learning, Information theory and statistical learning, convex optimization, data mining, information retrieval, bioinformatics, social network analysis, network science, reinforcement learning, stochastic control and optimization, stochastic simulation, electronic commerce, game theory, auctions and mechanism design, cognitive systems.

Industry Collaboration: Many CSA faculty are actively engaged in collaborative research with the industry. Ongoing collaboration includes projects with Adobe Labs, AMD, Google, IBM, Infosys, Intel, Microsoft Research India, NetApp, Nokia, Philips, SAP, SUN, TCS, Xerox, and Yahoo!.

University Collaboration: CSA is involved in joint research projects or faculty collaboration or student internships with several universities including Alberta, Chalmers, CMI, CMU, Grenoble, Harvard, IITB, IITM, INRIA, ISI, Leipzig, MIT, MPI, UCB, UCD, UCSC, SUNY, Technion, TIFR, Waterloo, York, and Zurich.

Research and Computing Laboratories

CSA houses several research and computing laboratories. CSA faculty and students also conduct research within labs located in sister departments such as ECE, EE, DESE, and SERC.

Algorithmic Algebra Lab

Compilers Lab

Complexity Theory Lab

Computer Architecture Lab (SERC)

Computer Architecture and Systems Lab

Database Systems Lab (SERC)

Distributed Computing Lab

Game Theory Lab

High Performance Computing Lab (SERC)

Informatics and Security Lab

Intelligent Systems Lab

Machine Learning and Learning Theory Group

Machine Learning Lab

Multicore Computing Lab

Programming Languages Lab

Scalable Software Systems Lab

Software Engineering and Analysis Lab

Stochastic Systems Lab

Theory Lab

Topic Analysis and Synthesis Lab

Visualization and Graphics Lab

CSA in Figures

Current Faculty	
Department Faculty	22
Associate Faculty	5
Adjunct Faculty and Senior Scientists	3

Faculty Distinctions	
Fellows of IEEE	6
Fellows of INSA	4
Fellows of IASc	5
Fellows of INAE	8
Fellows of NASI	4
J.C. Bose Fellows	1
S.S. Bhatnagar Awardees	1
IISc Research Awardees	6
Young Scientist Awards	17
Faculty Awards from IBM, Google, AMD, GM, Yahoo!, MSR, MSRI	28
Editorial Boards of International Journals	24
Vikram Sarabhai Research Award	1
Swarnajayanti Fellowship	1
ACM Distinguished Scientist	1
Abdus Salam ICTP Senior Associates	1

Staff	
Technical Staff	4
Office Staff	1
Support Staff	5

Research Publications (2008-13)	
Books and Monographs	14
Book Chapters	32
Journal Papers	191
Conference Papers	262
Best Paper Awards	8

Students	
Ph.D.	96
M.Sc. (Engg)	44
M.E. (CSE)	112
M.E. (SSA)	20 (Jointly with EE)

Student Distinctions (2006-11)	
IISc Best Thesis Awardees	12
Infosys Fellows	4
TCS PhD Fellows	4
IBM PhD Fellows	12
MSRI PhD Fellows	7
Google PhD Fellows	2
Google Women in Engineering Awardees	3
Yahoo! Key Scientific Challenge Awards	3
Best Poster Awards	6
Research Internships	18



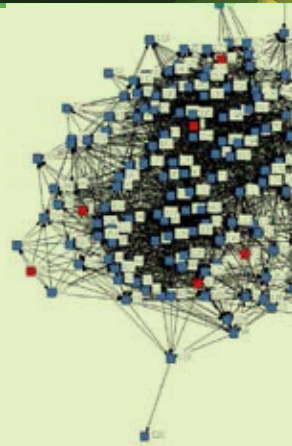
CSA in 2012-13

National Fellowships/Faculty Awards

- . Fellowship of Indian Academy of Sciences : 1
- . Fellowship of Indian Academy of Engineering: 3
- . Fellowship of National Academy of Sciences: 1
- . INAE Prof A.N. Mitra Memorial Award: 1
- . DST Ramanujam Fellowship : 1
- . Satish Dhawan Young Engineer Award: 1
- . INAE Young Engineer Award : 1
- . Indian Academy of Sciences Young Associate: 1
- . MSRI Outstanding Young Faculty Member Award: 1
- . AMD Faculty Award: 1
- . Yahoo! Faculty Award : 3
- . Adobe Labs Faculty Award : 1

Student Distinctions:

- . Yahoo! Scientific Challenges Award: 2
- . MSRI PhD Fellowship: 4
- . IBM Doctoral Fellowships : 11
- . TCS PhD Fellowships: 2
- . Google PhD Fellowships: 2
- . Google Women in Engineering Award: 2
- . Best Student Paper Nominations in International Conferences: 2
- . Best Poster Awards: 4



19-Feb-2010

Opportunities@CSA

The department has maintained an excellent reputation for high quality degree programs. Entry into all degree programs is highly competitive. All students are offered scholarships during their period of study, subject to satisfactory performance.

Post-Doctoral/ Research Associate Fellowships

The department invites accomplished Ph.D. graduates to apply for post-doctoral fellowships/ research associate positions.

Research Programs

CSA offers two research programs, M.Sc. (Engg.) and Ph.D., that train a student to become a perceptive and sound researcher. Students are expected to conduct independent research under the supervision of a faculty member, prepare a research proposal, and author a dissertation describing their original work. The anticipated time to earn the Ph.D. and M.Sc. (Engg.) degrees are 4 and 2 years, respectively. Before completion of their programs, students are expected to present and publish their research results at premier international fora.

Course Programs

The two course-based masters programs currently offered by the department are structured to provide a solid foundation in core areas of computer science through course work while allowing enough flexibility for the student to pursue an area of specialization in their research projects. The M.E. (Computer Science and Engineering) is the flagship program of CSA that attracts the best students in the country. The M.E. (Systems Science and Automation) program, jointly offered with the Electrical Engineering Department, is a unique program that blends computer science and systems science towards problem solving.

External Registration Program (ERP)

This program enables graduates working in public or private organizations including educational institutions to pursue a research degree at the department.

Quality Improvement Program (QIP)

This program is meant for faculty members in AICTE affiliated engineering colleges who wish to pursue an M.E. or a Ph.D. degree in the department.

Summer Internship Program

The department hosts about 25 undergraduate engineering students during summer towards an exciting research internship program.

Faculty@CSA

Shivani Agarwal, Assistant Professor

<shivani@csa.iisc.ernet.in>

Machine learning, statistical learning theory, computational biology, chem-informatics, information retrieval

Shalabh Bhatnagar, Professor

<shalabh@csa.iisc.ernet.in>

Performance analysis, stochastic control and optimization, simulation, communication networks

Arnab Bhattacharyya, Assistant Professor

<arnabb@csa.iisc.ernet.in>

Algorithms, complexity theory, theoretical computer science

Chiranjib Bhattacharyya, Associate Professor

<chiru@csa.iisc.ernet.in>

Machine learning, convex optimization, bioinformatics

Sunil Chandran, Associate Professor

<sunil@csa.iisc.ernet.in>

Graph theory, combinatorics, algorithms

Sanjit Chatterjee, Assistant Professor

<sanjit@csa.iisc.ernet.in>

Cryptology, information security

Susheela Devi, Senior Scientific Officer

<susheela@csa.iisc.ernet.in>

Pattern recognition, data mining, soft computing

Deepak D'Souza, Associate Professor

<deepakd@csa.iisc.ernet.in>

Automated verification

Ambedkar Dukkipati, Assistant Professor

<ad@csa.iisc.ernet.in>

Algorithmic algebra and algebraic geometry, Information theory and statistical learning

K. Gopinath, Professor

<gopi@csa.iisc.ernet.in>

Operating systems, storage systems, systems security

R. Govindarajan, Professor

<govind@csa.iisc.ernet.in>

Computer architecture, compiler optimizations, high performance computing (Associate Faculty)

Sathish Govindarajan, Assistant Professor

<gsat@csa.iisc.ernet.in>

Combinatorial geometry, computational geometry, algorithms

R.C. Hansdah, Associate Professor

<hansdah@csa.iisc.ernet.in>

Operating systems, fault tolerant and secure distributed computing, wireless networks

Ramesh Hariharan, Adjunct Faculty (Strand Life Sciences)

ramesh@csa.iisc.ernet.in ramesh@strandls.com

Algorithms, computational biology

Jayant R. Haritsa, Professor

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Database systems (Associate Faculty)

Aditya Kanade, Assistant Professor

<kanade@csa.iisc.ernet.in>

Formal methods, software design and analysis, analysis of embedded software

Ravi Kannan, Adjunct Faculty (Microsoft Research India)

kannan@csa.iisc.ernet.in kannan@microsoft.com

Theoretical computer science, optimization, massive data sets, sampling, clustering

P. Vijay Kumar, Professor

<vijay@ece.iisc.ernet.in>

Information theory, coding theory (Associate Faculty)

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Cognitive science, computational number theory, cryptography, security

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Pattern recognition, data mining

Y. Narahari, Professor and Chairman

<hari@csa.iisc.ernet.in>

Game theory, auctions and mechanism design, network science

Vijay Natarajan, Associate Professor

<vijayn@csa.iisc.ernet.in>

Scientific visualization, computational topology, computational geometry, graphics

Dilip P. Patil, Professor
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Commutative algebra, algebraic geometry
(Associate Faculty)

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Programming languages, programming tools,
software engineering

Murali Krishna Ramanathan
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Software engineering, programming
languages, scalable system design

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Parallelization, compiler design, multi-core
programming

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Complexity theory, theoretical computer
science

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Machine Learning, data mining

Y.N. Srikant, Professor
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Compiler design, power aware computing,
program analysis

Matthew Jacob Thazhuthaveetil, Professor
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Computer architecture
(Associate Faculty)

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supply chain design

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