

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. 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, cryptology, graph theory, 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, compilers, program analysis, software engineering.

Intelligent Systems

Pattern recognition, machine learning, convex optimization, graphical models, soft computing, 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.

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 CEDT, ECE, EE, and SERC.

Algorithmic Algebra Lab
Compilers Lab
Computer Architecture Lab (SERC)
Computer Architecture and Systems Lab
Database Systems Lab (SERC)
Distributed Computing Lab
Formal Verification Lab
Game Theory Lab
Graphical Models 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
Stochastic Systems Lab
Theory Lab
Topic Analysis and Synthesis Lab
Visualization and Graphics Lab

CSA in Figures

Current Faculty

Department Faculty : 21

Associate Faculty : 5

INAE Distinguished Professors: 2

Honorary Professor: 1

Adjunct Faculty : 2

Faculty Distinctions

Fellows of IEEE : 4

Fellows of INSA : 4

Fellows of IASc : 5

Fellows of INAE : 7

Fellows of NASI : 4

J.C. Bose Fellows: 1

S.S. Bhatnagar Awardees: 1

IISc Research Awardees: 6

Young Scientist Awards: 16

Faculty Awards from IBM, Google, AMD, GM, Yahoo!, MSR, MSRI: 24

Editorial Boards of International Journals: 18

Vikram Sarabhai Research Award: 1

Swarnajayanti Fellowship: 1

ACM Distinguished Scientist: 1

Abdus Salam ICTP Senior Associates: 1

Staff

Technical Staff: 5

Office Staff : 3

Support Staff : 5

Research Publications (2006-11)

Books and Monographs: 10

Book Chapters: 28

Journal Papers: 191

Conference Papers: 262

Best Paper Awards: 8

Students

Ph.D. : 91

M.Sc. (Engg): 36

M.E. (CSE) : 111

M.E. (SSA) : 30

Student Distinctions (2006-11)

IISc Best Thesis Awardees: 12

Infosys Fellows: 4

TCS PhD Fellows: 2

IBM PhD Fellows: 5

MSRI PhD Fellows: 5

Google Women in Engineering Awardees: 3

Yahoo! Key Scientific Challenge awards: 2

Best Poster Awards: 6

Research Internships: 18



CSA in 2011

Donald Knuth Prize

Adjunct Professor Ravi Kannan is awarded the Knuth Prize for 2011 for outstanding contributions to foundations of computer science

IISc Research Award

Professor Veni Madhavan is awarded the IISc Alumni Prize for Research Excellence in Engineering - 2011

Best Paper Awards

- . SIAM International Conference on Data Mining (SDM-2011) (Best Paper)
- . European Visualization Conference (EuroVis-2011) (Third Best Paper)
- . Intl. Cognitive Science Conference (COGSCI-2011) (Best Paper in the Perception/Action Category)

National Fellowships/Faculty Awards

- . Fellowship of Indian Academy of Sciences : 1
- . Fellowship of Indian Academy of Engineering: 1
- . Fellowship of National Academy of Sciences: 1
- . DST Ramanujam Fellowship : 1
- . Satish Dhawan Young Engineer Award: 1
- . INAE Young Engineer Award : 1
- . MSRI Outstanding Young Faculty Member Award: 1
- . AMD Faculty Award: 1
- . Yahoo! Faculty Award : 2 . MSRI Faculty Award : 1

Student Distinctions:

- . Yahoo! Scientific Challenges Award: 1
- . MSRI PhD Fellowship: 1
- . IBM Doctoral Fellowship : 1
- . TCS PhD Fellowships: 2
- . Google Women in Engineering Award: 1
- . Best Poster Awards: 2

