Department of Computer Science and Engineering

Introduction

The Department of Computer Science and Engineering at the Indian Institute of Technology Bombay is one of the largest departments in the country. The department's teaching and research activities are handled by forty faculty members. Currently, about hundred Ph.D. students, more than two-hundred M.Tech. students and more than two-hundred and fifty B.Tech. students form the student pool of the department. While several research activities are pursued by individual faculty and external collaborators, the department houses about ten research labs spanning the areas of networks, databases, embedded systems, computer graphics, language technologies, machine learning, compiler, and geospatial systems.

This year we are proud to announce that Ashwin Gumaste was the recipient of the Swarnajayanti Fellowship award in Engineering Sciences from the Dept. of Science and Technology. Three new faculty joined the department: Ajit Rajwade, Mythili Vutukuru, and Suyash Awate. The research presence of the department in prestigious international conferences continues to sail high.

Academic Programmes

<table>
<thead>
<tr>
<th>Programme</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.Tech</td>
<td>73</td>
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<td>Dual Degree</td>
<td>4</td>
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<tr>
<td>M.Tech</td>
<td>96</td>
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<td>Ph.D.</td>
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Fellowship Details

1. Microsoft India Research India Pvt Ltd. for Ph.D students: 1
2. IBM Ph.D. Fellowship: 1
3. TCS Ph.D. Fellowship: 8

R & D Activities

Sponsored Research Projects

<table>
<thead>
<tr>
<th>Sponsored Projects</th>
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<tbody>
<tr>
<td>No.of Ongoing Projects</td>
<td>85</td>
</tr>
<tr>
<td>No of New Projects</td>
<td>17</td>
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<tr>
<td>No of Completed Projects</td>
<td>10</td>
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<tr>
<td>Faculty Involved</td>
<td>39</td>
</tr>
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</table>
New Projects

“An Energy Management System for Core, Metro, Access Networks and Backhaul Traffic Using Indigenous Routers” Sponsored by Department of Information Technology

“INSPIRE Faculty award research grant” Sponsored by Department of Science & Technology

“The Technology and Development Solutions Cell” sponsored by IIT BOMBAY ALUMNI ASSOCPN. & CLASS OF 1987 OF IIT BOMBAY

“Improving memory management mechanisms of virtual machine monitors” Sponsored by International Business Machines Corporation.

“CARTS: Communication Assisted Road Transportation Systems” Sponsored by Information Technology Research Academy

“Testing field deployment of Aakash tablets in developmental activities” Sponsored by internally funded by MHRD project

“e-Yantra - Robot enhanced teaching in engineering colleges and schools (Phase 2)” Sponsored by Ministry of Human Resource Development


“Next Generation Information Extraction” sponsored by Tata Consultancy Services -IIT Bombay research cell

“Performance Prediction of Multi-Tier Enterprise Applications” Sponsored by Tata Consultancy Services -IIT Bombay research cell

“Railway Scheduling and pricing” Sponsored by Tata Consultancy Services -IIT Bombay research cell

“Program Analysis for precise and scalable system verification and transformations” Sponsored by Tata Consultancy Services -IIT Bombay research cell

“Smart and safe Electric power management for homes and buildings” Sponsored by Tata Consultancy Services -IIT Bombay research cell

“Testing Database Applications” sponsored by Tata Consultancy Services -IIT Bombay research cell

“Distributed Optimization techniques for Machine Learning on Grid” Sponsored by YAHOO INC.

“Grid Dynamic Server Consolidation in Cloud Computing” Sponsored by YAHOO INC.
Ongoing Projects

“SanGeniX: A comprehensive Next Generation Sequence (NGS) data analysis solution” Sponsored by DEPTT OF BIOTECHNOLOGY

“Designing a Smarter and Greener Electric Grid: A Sensor-data Driven Approach” Sponsored by Department of Electronics & Information Technology

“SOME TRAIN PATHING PROBLEMS” Sponsored by Department of Science & Technology

“Development and Development and Demonstration of Mobile based ICT Advisory to Farmers” Sponsored by Department of Science & Technology

“Exploring Technologies and Solutions to Architect the Carrier-Class Data-Center and Cloud Networking Environment” Sponsored by International Business Machines Corporation.

“Query Optimization for Massively Parallel Data Processing” Sponsored by International Business Machines Corporation.

“Scalability of Complex Event Processing Engines.” Sponsored by ISPAT INDUSTRIES.

“Hardware and Software optimization, and testing of Low Cost Access Devices (LCAD)” Sponsored by Ministry of Human Resource Development.

“Teachers Empowerment, Students Empowerment and Integration Tools for Empowerment (Synchronous Delivery), abbreviated as the Talk to a Teacher project (Phase 2)” Sponsored by Ministry of Human Resource Development.

“Mining cluster file system performance logs” Sponsored by Netapp India Private Limited.

“TCS Research Scholar program” Sponsored by Tata consultancy Services.

“Development of Techniques and Tools for Formal Verification of Computer Systems with Improved Precision and Scalability”. Sponsored by BOARD OF RESEARCH IN NUCLEAR SCIENCES

“Development and Evolution of Sanskrit Word -Net ( PHASE II)” Sponsored by Central Institute of Indian Languages

“India Telco Summit” Sponsored by Conferences on Indiatelco Summit

“Development of English to Indian Language Machine Translation system (EILMT) PHASE-II” Sponsored by Department of Information Technology

“Development of Dravidian WordNet: An integrated WordNet for Telugu, Tamil, kannada & Malayalam” Sponsored by Department of Information Technology

“SPARC: Spectrum Aware Rural Connectivity” Sponsored by Department of Information Technology
“Development of Radiosonde for Meteorological System” Sponsored by Defence Research & Development Organisation

“Structural Health Monitoring with Networked Embedded Systems” Sponsored by Department of Science & Technology

“Rural Technology Action Group (RuTAG)” Sponsored by Department of Science & Technology

“DATABASES AND INFORMATION RETRIEVAL” Sponsored by Department of Science & Technology

“ENDOWMENT INTEREST FOR CSE/KRESIT DEPARTMENT” sponsored by ENDOINTCSE

“ENTITY & RELATION SEARCH ON THE UNCERTAIN WEB”. Sponsored by GOOGLE

“IBM FACULTY AWARD 2011 / PROF. GANESH RAMAKRISHNAN”. Sponsored by International Business Machines Corporation.

“Unrestricted Research Project Grant” Sponsored by Microsoft Research Lab India Pvt. Ltd.

“Availability Analysis of Storage Systems” Sponsored by Netapp India Private Limited

“High quality domain specific statistical machine translation system from English to Indian Languages”. Sponsored by YAHOO INC.

“Design and Development of Gigabit Networking Solutions for C&I Applications” Sponsored by Bhabha Atomic Research Centre

“BRNS/ Analysis of SCADE Lustre models: Runtime Monitoring & Testing” Sponsored by Board of Research in Nuclear Sciences

“High-Speed Switching Fabric for Transport Networks and Distributed Processor Interconnects” Sponsored by Board of Research in Nuclear Sciences.

“Fiber to the home-key Ingredient Technologies for Energy Conservation and Bridging the Indian Digital divide”. Sponsored by Department of Information Technology

"Development of Indradhanush: An integrated Word Net for Bengali, Gujarati, Kashmiri, Konkani, Oriya, Punjabi & Urdu" Sponsored by Department of Information Technology

“Virtualized Cloud Computing Infrastructure using Light Trails and very fast switching”. Sponsored by Department of Information Technology

“Network Sanitization” Sponsored by Department of Information Technology

“Deploying omnipresent Ethernet based data-centers in actual networks - Validation of project periscope”. Sponsored by Department of Information Technology
“PHASE II ---Development of Indian Language to Indian Language Machine Translation System (II-IL-MT)” Sponsored by Department of Information Technology

“Development of Cross Lingual Information Access (CLIA) System Phase II”. Sponsored by Department of Information Technology

“Immersive Digital Heritage”. Sponsored by Department of Science & Technology

“Support for Cloud Computing related research” Sponsored by INTERNATIONAL BUSINESS MACHINES CORPORATION.

“Cloud Collaboratory” Sponsored by INTERNATIONAL BUSINESS MACHINES CORPORATION.

“Parallel Computing Research Prospects Sponsored by INTEL TECHNOLOGY INDIA PVT. LTD.

Geo-spatial data base Management- The Ganga River Basin Management Project (GRBMP)” sponsored by MINISTRY OF ENVIRONMENT & FORESTS

“OSCAR++ (Open Source Courseware Animations Repository)” Sponsored by Ministry of Human Resource Development


“Development of Multilingual Resources and Technologies for Indian Languages” Sponsored by Xerox Corporation.

“YAHOO INC./YAHOO RESEARCH GRANT 2010”. Sponsored by YAHOO INC.

“Bridging Query Intents to Catalogs and Annotated Documents”. Sponsored by YAHOO INC.

“GCC Resource Center” Sponsored by Department of Information Technology

“DST/ Advanced Research Lab for Geospatial Information Science and Engineering” Sponsored by Department of Science & Technology

“SwarnaJayanti Fellowship for Large Scale Gene Expression Analysis on High Performance Parallel Computers for Functional Genomics and Systems Biology” Sponsored by Department of Science & Technology

“GEYSERS: Generalized architecture for dynamic infrastructure services”. Sponsored by European Commission

“PROF. UMESH BELLUR / VIRTUAL MACHINE PLACEMENT IN INFRASTRUCTURE CLOUDS”. Sponsored by INTERNATIONAL BUSINESS MACHINES CORPORATION.

“Empowerment of Student & Teachers through Synchronous & asynchronous instruction” Sponsored by Ministry of Human Resource Development

“Project OSCAR++, Open Source Course-ware Animation Repository for higher education”. Sponsored by Ministry of Human Resource Development

“Creation of Machine translation tools and resources for English to Dravidian Languages” Sponsored by Ministry of Human Resource Development

“MICROSOFT RESEARCH INDIA OUTSTANDING YOUNG FACULTY AWARD”. Sponsored by Microsoft Research India Outstanding Faculty Award (under IRCC)

“Unrestricted Grant for Research Support (M/s. Microsoft Research Lab India Pvt. Ltd., Bangalore)” Sponsored by Microsoft Research Lab India Pvt. Ltd.

“Microsoft Grant (Microsoft Research Lab India Pvt. Ltd, Bangalore)” sponsored by Microsoft Research Lab India Pvt. Ltd.

“Interference and Affinity Characterization of VMs for Server Consolidation in Infrastructure Clouds (Yahoo Software Development India Pvt. Ltd., Bangalore)” sponsored by YAHOO INC.

“Development of NE-Wordnet : An Integrated Wordnet for North East Languages- Assamese, Bodo, Manipuri & Nepali”. Sponsored by Department of Information Technology


“2008 IBM FACULTY AWARD”. Sponsored by INTERNATIONAL BUSINESS MACHINES CORPORATION.

“Research Collaboration on Mobile and Wireless Systems, with Microsoft Research India (MSRI)” sponsored by Microsoft Research Lab India Pvt. Ltd.

“Information Aggregation from tables on the Web” sponsored by Yahoo Inc

“IBM FACULTY AWARD / Building a self-aware and self-tuning distributed system using queuing theoretic and control theoretic approaches”. Sponsored by International Collaboration Projects

“IBM FACULTY AWARD / PROF. KRITHI”. Sponsored by International Collaboration Projects

“IBM Faculty Award/ Supratik Chakraborty/ Approximate search and coverage based verification techniques for flattened circuits with locally specified reference models”. Sponsored by International Collaboration Projects

“Microsoft Award/Soumen Chakrabarti/ Scalable annotation, search & aggregation of semi structured graph and text data models”. Sponsored by International Collaboration Projects
“Large Scale Application Development and Knowledge Dissemination in Natural Language Processing and Text Mining (HP Labs, Bangalore)” Sponsored by Private Organisations

“TCS - IIT BOMBAY LABORATORY FOR INTELLIGENT SYSTEMS”. Sponsored by Private Organisations

“FORMAL VERIFICATION OF LARGE STATE TRANSITION SYSTEMS (M/S.GENERAL MOTORS INDIA PVT. LTD., B'LORE)” Sponsored by Private Organisations

“Building Check-Dams for Drinking Water: A Teaching and Research Initiative”. by DONATION

“RTL Symbolic Simulation”. Sponsored by International Collaboration Projects

“IBM Faculty Awards-IBM Global Services India Pvt. Ltd” Sponsored by Private Organisations

“Sponsorship Towards Creating a Logic Base at IIT Bombay” Sponsored by Private Organisations

“DEVELOPMENTAL INFORMATICS” Sponsored by Private Organisations

“Association For Computing Machinery -International Collegiate Programming Contest -IBM Canada Ltd” Sponsored by International Collaboration Projects

“Exchange of Ideas on Data Mining and Data Cleaning Projects-Microsoft Research” sponsored by International Collaboration Projects

“INTEREST OF ENDOWMENT FUND OF THE CFDVS” by DONATION

**Completed Projects**

“Travel assistance from Microsoft for Sapna Jain” sponsored by Microsoft Research Lab India Pvt. Ltd

“Scalability of Complex Event Processing Engines” sponsored by ISPAT INDUSTRIES

“Development and Evolution of Sanskrit Word -Net (PHASE II)” sponsored by Central Institute of Indian Languages

“Development of Radiosonde for Meteorological System” sponsored by Defence Research & Development Organisation

"Development of Indradhanush: An integrated Word Net for Bengali, Gujarati, Kashmiri, Konkani, Oriya, Punjabi & Urdu" sponsored by Department of Information Technology

“Parallel Computing Research Prospects” sponsored by INTEL TECHNOLOGY INDIA PVT. LTD.

“GCC Resource Center” sponsored by Department of Information Technology

“Creation of Machine translation tools and resources for English to Dravidian Languages” sponsored by Ministry of Human Resource Development
“Development of NE-Wordnet : An Integrated Wordnet for North East Languages- Assamese, Bodo, Manipuri & Nepali” sponsored by Department of Information Technology

“Building Check-Dams for Drinking Water: A Teaching and Research Initiative” Sponsored by DONATION.

Consultancy Projects

<table>
<thead>
<tr>
<th>No of Jobs</th>
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<tr>
<td>Faculty involved</td>
<td>12</td>
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Visitors to the Department

Dr. Ronny Lempel, from Yahoo! Research. He delivered a lecture on “Recommendation challenges in web media settings”.

Dr. Kapil Vaswani from Microsoft Research India, Bangalore. He delivered a lecture on “Secure query processing on the cloud”.

Dr. Dietmar Berwanger from CNRS, ENS-Cashan, France. He delivered a lecture on “Independence Logic – Games and descriptive complexity.

Dr. Dominik Wojtczak from University of Liverpool. He delivered a lecture on “Nash equilibria in stochastic games”.

Prof. Rahul Mangharam from University of Pennsylvania. He delivered a lecture on “Closing the loop with cyber-physical system modeling.

Prof. Prasad Jayanti from Dartmouth College, USA. He delivered a lecture on “Tight time-space tradeoff for mutual exclusion”.

Dr. Gurulingesh R. from CISTER Research Centre. He delivered a lecture on “Real-time scheduling on heterogeneous multicores”.

Dr. Sameer Sahasrabuddhe from AMD, Bangalore. He delivered a lecture on “Heterogeneous computing”.

Prof. David Choffnes from Northeastern University. He delivered a lecture on “Improving transparency and control in mobile internet systems”.

Dr. Sriram Rajamani and Dr. Aditya Nori from Microsoft Research India. He delivered a lecture on “Programming Languages and Tools Research @ Microsoft Research India”.

Prof. Ansuman Banerjee from ISI, Kolkata. He delivered a lecture on “Counterexample ranking using mined invariants”.

Prof. Shailesh Tipnis from Department of Mathematics, Illinois state university. He delivered a lecture on “Decomposition of even degree regular graphs and multigraphs into small trees”.

Prof. Narendra Karmarkar from Scientific advisor to Govt. of India. He delivered a lecture on “Advanced algorithmic approach to optimization.”

Dr. Siddhartha Chaudhuri from Princeton University. He delivered a lecture on “Content creation with semantic attributes”.

Dr. Paul Barter, Adjunct Professor, LKY School of Public Policy, National University of Singapore. He delivered a lecture on “Rethinking parking in the context of Mumbai-Relationship to urban transportation, Urban form and affordable housing”.

Dr. Hermann Hartig from TU Dresden. He delivered a lecture on “Towards smaller trusted computing bases”.

Dr. Umang Bhaskar from California Institute of Technology (Caltech). He delivered a lecture on “Network improvement for equilibrium routing”.

Dr. Mayank Bawa, PhD, Stanford University. He delivered a lecture on “Anecdoted of a first-time CS Entrepreneur”.

Dr. Emmanuel Filiot from Brussels University. He delivered a lecture on “Transducer theory and streaming transformations”.

Prof. Rohit Parikh from City University of New York and Brooklyn College. He delivered a lecture on “Knowledge from inadvertent and strategic communication”.

Mr. Kuldeep Singh Meel from Rice University. He delivered a lecture on “Sampling techniques for constraint satisfaction and beyond”.

Prof. Sanjit A. Seshia from University of California. He delivered a lecture on “Human-in-the-loop embedded systems: specification, design and verification”.

Prof. Murali Krishnan R. from IISc Bangalore. He delivered a lecture on “Trace driven dynamic deadlock detection and reproduction”.

Prof. Paul Gastin from Ecole Normale Superieure (ENS) de Cachan, France. He delivered a lecture on “Specification and verification of quantitative properties via expressions, logistics and automata”.

Mr. Roshabh Iyer from University of Washington. He delivered a lecture on: Submodular combinatorial problems in machine learning: Algorithms and applications”.

Dr. Dorothea Wagner from Karlsruhe Institute of Technology. She delivered a lecture on “Algorithms for route planning in transportation networks”.

Prof. Prashant Shenoy from University of Massachusetts. He delivered a lecture on “Demand side energy management in smart buildings”.
Conferences/Symposia/Workshops/Seminars (Participated/Papers Presented)

International

Soumen Chakrabarti
Participated in the 22nd International Conference World Wide Web 2013, track chair for search, systems and applications at Rio de Janeiro, Brazil.

Participated in the International Conference EMNLP 2013: Conference on Empirical Methods in Natural Language Processing — October 18–21, 2013 — Seattle, USA.

Sridhar Iyer
Participated in ACM International Computing Education Research Workshop (ICER), San Diego, USA, August 2013.

Participated in International Conference on Computers in Education (ICCE), Bali, Indonesia, November 2013.

S. Sudarshan
Participated in COMAD 2013, Ahmedabad, as Chair, CSI SIGDATA, and presented a tutorial.

Participated in VLDB 2013, Italy, and attended meeting of Board of Trustees, VLDB Endowment

Ashwin Gumaste
Participated in OFC Conference in SFO.

Pushpak Bhattacharyya
Presented a paper “Measuring Sentiment Annotation Complexity of Text” ACL Conference held during June 22-27, 2014 at Baltimore.

Participated in Global WordNet Conference(GWC 2014) held at Tartu, Estonia.

Varsha Apte

Presented a paper “PowerPerfCenter: A Power and Performance Prediction Tool for Multi-Tier Applications” at 5th ACM/SPEC International Conference on Performance Engineering held during March 24-26, 2014 at Dublin, Ireland.
Conferences/Symposia/Workshops/Seminars (Coordinated/Chaired by Faculty)

Sridhar Iyer
Program co-Chair - IEEE International Conference on Technology for Education (T4E) 2013.

Deepak B Phatak
Coordinated conduct of several T10KT workshops.
Aakash Application development techniques for students (Deepak B Phatak), attended remotely by over 15,000 students
Research Methodologies and Educational Technology (Sridhar Iyer), attended remotely by over 6,000 teachers
Data Base Management System (S. Sudarshan), attended remotely by over 8,000 teachers
Engineering Mechanics (Prof. Uday Gaitonde), attended remotely by over 6,500 teachers

Invited Lectures

National

Soumen Chakrabarti
Keynote talk at COMSNETS 2014, Bangalore

Ajit Diwan
NBHM Sponsored ATM Workshop on Graph Theory, Kerela

International

Bhattacharyya Pushpak
Invitee, Google Focused Faculty Workshop on Natural Language Understanding and Knowledge Discovery, November 14-15, 2013, Nanjing, China.
Invited keynote talk to the Computational Linguistics Research Group at University of Toronto.

Sunita Sarawagi
Invited keynote talk at Google Focused Faculty Workshop on Natural Language Understanding and Knowledge Discovery, November 14-15, 2013, Nanjing, China.

Deepak B Phatak
Invited keynote at the plenary session of the International Conference on Transformations in Engineering Education. January 16-17, 2014, Hubli, India
Topic: Adopting MOOCs for quality engineering education in India

**Soumen Chakrabarti**

Tutorial on *Query Interpretation and Representation for Searching the Web of Objects* at **WWW 2013**, Rio de Janeiro.

**Significant Awards/Distinctions**

- **Padmashri** awarded by Government of India on April 5, 2013 (Deepak B Phatak)
- Swarnajayanti Award 2012-2013 (Ashwin Gumaste)
- INAE Fellowship 2014 (Soumen Chakrabarti)
- INAE Fellowship 2014 (Sunita Sarawagi)
- P. K. Patwardhan award 2013. (Ashwin Gumaste)

**Honorary Work**

- Chair of Asian Language Resources Committee 2013-2014 under the aegis of **AFNLP**. (Bhattacharyya Pushpak)
- Vice President elect, Association of Computational Linguistics (**ACL**), 2014-15. (Bhattacharyya Pushpak)
- VLDB Early career researcher, Ten year best paper awards committee 2013-2014 (Sunita Sarawagi)
- VLDB Board of Trustees and SPEND Committee 2014 (S. Sudarshan)
- ACM SIGKDD 2013, 2014: Innovation award and service award committee (Sunita Sarawagi)
- ACM SIGKDD 2014 Best paper award committee (Sunita Sarawagi)
- ACM SIGMOD Panel co-chair (Sunita Sarawagi)
- PC Member: ICML, WSDM, WWW 2013 (Sunita Sarawagi)
- International Conference on Knowledge Management (CIKM) Senior PC 2013 (S. Sudarshan)
- SIGMOD International Conference on Data Management, PC Member 2013  (S. Sudarshan)
- Program Committee (PC) Member for KDD 2014, COLING 2014, ISWC 2014, ACL 2013, KDD 2013, ILP 2013 (Ganesh Ramakrishnan)
- Best Paper Award at MBIA workshop at MICCAI International 2013 (Suyash P. Awate)
Faculty Members and their Specializations

Bharat Adsul
Formal methods in Concurrency, Logics and Games.

Varsha Apte
Performance Evaluation of Computer Systems and Networks

Kavi Arya
Functional Programming Applications (Domain Specific Languages), Embedded Systems/Parallel Programming Languages, Distance Learning

Suyash P. Awate
Image Processing, Medical Image Computing, Computer Vision, Statistical Inference, Machine Learning

Umesh Bellur

Pushpak Bhattacharyya
Natural Language Processing and Linguistics, Machine Translation and Machine Learning

Supratim Biswas
Parallel and Distributed Processing, Neural Nets , Architecture

Soumen Chakrabarti
Hypertext databases, Data mining

Supratik Chakraborty
Formal Methods, Formal Verification, Automata Theory, Logic and its Applications.

Sharat Chandran

Parag Chaudhuri
Computer Animation, Computer Graphics and Geometric Computer Vision

Kameswari Chebrolu
Wireless Networks
Om P. Damani
Natural Language Processing

Dhananjay Madhav Dhamdhere
Distributed Algorithms, Programming Languages, Operating Systems, Optimizing Compilers

Ajit Diwan
Graph Theory, Algorithms.

Ashwin Gumaste
Optical Networks, Telecommunication Networks, Data Centers, Carrier Ethernet

Sridhar Iyer
Educational Technology, Ubiquitous Learning, Wireless Networks.

Saketha Nath J
Machine Learning, Data Mining, Convex Optimization

Rushikesh K Joshi
Object Oriented Systems, Distributed Systems, Software Architectures

Uday Khedkar
Programming Languages, Compilers, Data Flow Analysis.

Purushottam Kulkarni
Sensor and Wireless Networks, Distributed Systems and Data Dissemination. Developing solutions to problems in above areas for non-urban/rural settings.

Nutan Limaye
Algorithms and Complexity Theory

Bernard Menezes
Information Appliances, Electronic Commerce, Java Security, Parallel Computing, Time Series Forecasting

Deepak B Phatak
Ajit Rajwade
Image Processing, Computer Vision, Image Restoration, Image Compression, Probability Density Estimation, Bayesian Methods, Compressive Sensing and Matrix Completion

Krithi Ramamritham
Databases, real-time systems, and distributed applications, Dynamic Data in sensor networks, embedded systems, mobile environments and the web.

Bhaskar Raman
Computer networks, Wireless systems, Communication system design for developing regions

Ganesh Ramakrishnan
Statistical Relational Learning, Graphical Models, Some other topics in Machine Learning such as Support Vector Machines, Information Extraction

Abhiram G Ranade
Algorithms and Combinatorial Optimization

Krishna Shankaran Narayanan
Bio-inspired Computing, Formal Methods, Cyber-Physical Systems

S.Akshay
Formal Methods

Amitabha Sanyal
Functional Programming, Compilers, and Programming Languages

Sunita Sarawagi
Databases, data mining, and machine learning. Her current research interests are web information extraction, data integration, graphical models and structured learning.

Nandlal L Sarda
Databases, Information Systems, Software Engineering

Sivakumar G
Automated Reasoning, Logic Programming, Rewrite Systems, Networks, Distributed Systems

Milind Sohoni
Combinatorial Optimization, Mathematical Programming, Algorithms
Sudarshan S. (Head of the Department)

Database Systems

Trivedi Ashutosh

Formal Methods in Verification and Synthesis, Cyber-Physical Systems

Sundar Vishwanathan

Algorithms, Combinatorics, Complexity Theory.

Mythili Vutukuru

Computer Networking, Wireless Communication, Distributed Systems, Network Security

Publications

Books

Books (Authored)

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Books (Edited)

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Chapter (Book)

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Article in Journals

Papers in Refereed Journal

Bharat Adsul


Soumen Chakrabarti


Parag Chaudhuri

**Kameswari Chebrolu**


**Saketha Nath J.**


**Ashwin Gumaste**


**Sridhar Iyer**


**Purushottam Kulkarni**


**Nutan Limaye**


**Ajit Rajwade**


**Krithi Ramamritham**


Bhaskar Raman


Ganesh Ramkrishnan


Akshay S.


Sunita Sarawagi


Milind Sohoni


Sudarshan S.


Sundar Vishwanathan


Papers Published in Proceedings of Conferences/Symposiums/Seminars

Varsha Apte


Suyash P. Awate

Eleanor Wong, Suyash P. Awate, P. Thomas Fletcher: Adaptive Sparsity in Gaussian Graphical Models. ICML (1) 2013: 311-319

Gopalkrishna Veni, Zhisong Fu, Suyash P. Awate, Ross T. Whitaker: Bayesian Segmentation of Atrium Wall Using Globally-Optimal Graph Cuts on 3D Meshes. IPMI 2013: 656-667


Umesh Bellur

Senthil Nathan, Purushottam Kulkarni, Umesh Bellur: Resource availability based performance benchmarking of virtual machine migrations. ICPE 2013: 387-398

Pushpak Bhattacharya

Kashyap Popat, Balamurali A.R, Pushpak Bhattacharyya and Gholamreza Haffari, The Haves and the Have-Nots: Leveraging Unlabelled Corpora for Sentiment Analysis, ACL 2013, Sofia, Bulgaria, August 4-9, 2013

Vasudevan N. and Pushpak Bhattacharyya, Little by Little: Semi Supervised Stemming through Stem Set Minimization, International Joint Conference on Natural Language Processing (IJCNLP 2013), Nagoya, Japan, October 14-18, 2013

Ankit Ramteke, Akshat Malu, Pushpak Bhattacharyya and Saketha Nath, Detecting Turnarounds in Sentiment Analysis: Thwarting, ACL 2013, Sofia, Bulgaria, August 4-9, 2013

Abhijit Mishra and Pushpak Bhattacharyya, Automatically Predicting Sentence Translation Difficulty, ACL 2013, Sofia, Bulgaria, August 4-9, 2013


Salil Joshi, Diptesh Kanojia and Pushpak Bhattacharyya, More than meets the eye: Study of Human Cognition in Sense Annotation, NAACL HLT 2013, Atalanta, USA, June 9-14, 2013


**Soumen Chakrabarti**

Hrushikesh Mohapatra, Siddhanth Jain, Soumen Chakrabarti: Joint Bootstrapping of Corpus Annotations and Entity Types. EMNLP 2013: 436-446

Uma Sawant, Soumen Chakrabarti: Learning joint query interpretation and response ranking. WWW 2013: 1099-1110

**Supratik Chakraborty**

Hrishikesh Karmarkar, Manas Joglekar, Supratik Chakraborty: Improved Upper and Lower Bounds for Büchi Disambiguation. ATVA 2013: 40-54

Supratik Chakraborty, Kuldeep S. Meel, Moshe Y. Vardi: A Scalable and Nearly Uniform Generator of SAT Witnesses. CAV 2013: 608-623

Supratik Chakraborty, Kuldeep S. Meel, Moshe Y. Vardi: A Scalable Approximate Model Counter. CP 2013: 200-216

Ajith K. John, Supratik Chakraborty: Extending Quantifier Elimination to Linear Inequalities on Bit-Vectors. TACAS 2013: 78-92

**Parag Chaudhuri**

Viraj Churi, Gaurav Bhagwat, Parag Chaudhuri: Directable Animation of Non-photorealistic Fluids. GRAPP/IVAPP 2013: 254-260

Improved Interactive Reshaping of Humans in Images Neha Arora, Harsh Kumar, Jagmeet S. Dhaliwal, Prem Kalra, Parag Chaudhuri, WSCG 2013 Communications Papers Proceedings, pp 230-238, Plzen, Czech Republic.

Directable Animation of Non-Photorealistic Fluids Viraj Churi, Gaurav Bhagwat, Parag Chaudhuri Short Paper, GRAPP 2013, Barcelona, Spain.

Om P. Damani

Om P. Damani, Shweta Ghonge: Appropriately Incorporating Statistical Significance in PMI. EMNLP 2013: 163-169

Improving Pointwise Mutual Information (PMI) by Incorporating Significant Co-occurrence - Om P. Damani. 17th Conference on Computational Natural Language Learning, CoNLL 2013.

Ashwin Gumaste

Ashwin Gumaste, Bala Murali Krishna Bheri, Ashwin Kshirasagar: FISSION: Flexible interconnection of scalable systems integrated using optical networks for data centers. ICC 2013: 3963-3968


Ashwin Gumaste, Bala Murali Krishna Bheri: On the architectural considerations of the FISSION (Flexible Interconnection of Scalable Systems Integrated using Optical Networks) framework for data-centers. ONDM 2013: 23-28


Sridhar Iyer


Kapil Kadam, Sameer Sahasrabudhe, Sridhar Iyer and Venkatesh Kamat. Integration of Blender 3D in a basic computer graphics course. [Poster] International Conference on Computers in Education (ICCE), Bali, Indonesia, November 2013.

Aditi Kothiyal, Rwitajit Majumdar, Sahana Murthy and Sridhar Iyer. Effect of think-pair-share in a large CS1 class: 83% sustained engagement. ACM Intl Computing Education Research Workshop (ICER), San Diego, USA, August 2013.

Saketha Nath J.

Ankit Ramteke, Akshat Malu, Pushpak Bhattacharyya, J. Saketha Nath: Detecting Turnarounds in Sentiment Analysis: Thwarting. ACL (2) 2013: 860-865

Rushikesh K. Joshi


Purushottam Kulkarni

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