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A very Happy New Year to you all!

We feel excited and are looking forward to an eventful 2011. One of the things that make us excited about 2011 is the collection of activities "our team" has been able to achieve together. "Our team" includes the UR core team, all the IBM participants as well as the readers of this Newsletter! Let me take you through the landmarks of the second half of 2010, and I hope that you will also be in our camp that is set to make 2011 even more memorable and productive.

Just as IBM is committed to making the society better through the strong and sustained Corporate Responsibility programs, IBM India UR is equally very focussed on bridging the digital divide and industry-academia gap. Some of the activities of second half of 2010 towards that are illustrations of that.

IBM India UR was able to secure two prestigious SUR (Shared University Research) grants- one to IIT Kharagpur and the other to IIT Madras. SUR is a worldwide program and is fiercely competitive in nature. Both the SURs, are aligned with Smarter Planet themes, and are also aligned with projects of national importance for India and are well supported by ISL and IRL, along with IBM Corporate Headquarters. IBM India also signed OCR (Open Collaborative Research) with IIT Kharagpur and IIT Madras on smart power grids. IBM Faculty Awards are also very competitive and is a worldwide program. In the second half of 2010 IBM India UR has been able to secure 4 Faculty Awards and the recipients are Dr Pinaki Mitra (IIT Guwahati), Dr Pabitra Mitra (IIT Kharagpur), Mydhili Nair (MSRIT) and Dr Rahul Marathe (IIT Madras).

In the second half of 2010, IBM India UR conducted 40 sessions in webinar series on variety of topics and more than 3000 students and faculty participated from 30 campuses across India. The webinars, for the first time, featured general topic sessions including "Intellectual Property", importance of services and importance of diversity.

'Global Remote Mentoring' projects included 115 projects, being worked on by 340 students who qualified themselves both on technical merit and also proving that their project outline is worthy. Almost 10 assets have come out of these projects. Out of 200+ applications received, 61 students were declared to be "Campus Ambassadors".

IBMers teaching variety of courses, augmenting faculty through "Faculty Enablement Program" and extending courseware to many campuses as "electives" or even as "mainstream" courses, is yet another way of making academia more "industry ready". Examples are advanced database technology at IISc, CoEP, VJTI, RVCE; Operating systems at SASTRA; IoD at IIIT Bangalore; Storage Virtualization at CoEP; multiple HPC workshops and so on.

Our internship program also enables us to work closely with different campus teams. India Software Labs (ISL) and IBM Research-India (IRL) conducted 10 week internships, and IRL also conducted "I-CARE 2010" conference. IBM India UR also strove to encourage diversity participation in technology. Another interesting program called "Faculty Residency", sponsored by ISL, wherein faculty from campuses spent 2-4 weeks at IBM facilities for exchange of skills with IBMers and also identifying needs in bridging the academia-industry gap, was completed. We plan to not only repeat but also expand this new program in 2011.

With the encouraging formal feedback IBM India UR received from a faculty-student survey in July-August 2010, and also from informal feedback received from students, our various individual programs continue and expand in 2011. It promises to be a very interesting year already so let us strive together to turn our vision of bridging the industry-academia gap, into reality.

Dr. Bhooshan Kelkar
Country Manager, IBM India University Relations





IBM - a sustained record of corporate responsibility

IBM is proud that our strategic business priorities are tightly aligned with our social responsibility efforts. A smarter planet enables and requires smarter citizenship. We're enthusiastic about our record and proud to share it with you, and, hopefully, to begin a discussion.

IBM's [2009 Corporate Responsibility Report](#) details the specific ways in which IBM and IBMers are making the world healthier, more sustainable and smarter. It provides an annual update on our company's strategies, activities and results in the areas of governance, supply chain, the environment, employment practices and community partnership. We'd like to share the results with you.

In the report, you can read about some of the ways IBMers are making the world work better:

- How our scientists are pushing the frontiers of environmental sustainability – from green data centers to smarter buildings to smarter roadways and waterways.
- How IBMers are building smarter healthcare systems around the world, with innovations ranging from bioinformatics to electronic medical records to smarter hospitals.
- How hundreds of IBMers have worked with non- governmental organizations (NGOs) and local communities in emerging markets to foster local business development, as part of the company's groundbreaking [Corporate Service Corps](#).
- How IBM has achieved a remarkable milestone – more than 10 million hours of volunteer service in communities around the world.

Other highlights in the 2009 Corporate Responsibility Report include how:

- IBM is providing [employees](#) with skills training; opportunities to gain global experience, health and wellness programs and including rebate incentives for healthy lifestyles.
- We are protecting the [environment](#) in all our business activities, including an energy conservation program that avoided over 142,000 metric tons of CO2 emissions and saved our company \$26.8 million last year.
- We are setting new requirements for our global [suppliers](#) to deploy and sustain corporate responsibility and environmental management systems.
- We have strengthened our [governance](#) practices through Enterprise Risk Management (ERM), embedding a strong culture of risk awareness throughout the company.

Link for 2009 Corporate Responsibility Report: <http://www.ibm.com/ibm/responsibility/report/2009/index.shtml>

IBM India received Ecosystem Connect & Development Award

IBM India recently won leading management consulting company Zinnov's Ecosystem Connect & Development Award, for its many contribution to the Indian University ecosystem. Received by Amol B Mahamuni for IBM India, the award recognizes IBM's mature model for interacting with the universities in India and our extensive work with universities for various strategic engagements. The breadth of our engagements is also noteworthy ranging from medium touch programs covering large number of schools through technology day, technical contests and curricula, to high touch programs such as Center for Advanced Studies, collaborative research, faculty awards and SUR grants at Tier-1 schools. Investing its resources in building the university ecosystem beyond the tier-1 IITs, the ISL team has worked on impacting a larger student body by creating affiliate programs in various institutes of repute.

http://www.zinnov.com/aboutus_overview.html?PHPSESSID=2f1e2a3ae9c2a57e604409a5537a1b1f





Shared University Research (SUR) grants for IIT Madras and IIT Kharagpur

For 2010, IBM India has been able to secure two Shared University Research (SUR) Grants- one for IIT Madras and the other for IIT Kharagpur. SURs are extremely competitive worldwide and we are happy to receive two grants for India in this year.

IIT Madras SUR is 'Smart Analytics Framework for GIS/GPS Data Based Applications' which is geared towards two main Smarter Planet agenda themes- Smarter Cities and Healthcare. Advanced analytics to be used as predictive method and 'actionable intelligence' for large volumes of complex GIS/GPS data to be used for traffic management and outbreak and spread of diseases is at the heart of this SUR.

IIT Kharagpur SUR focusses on two main Smarter Planet agenda themes- healthcare and water management. In telemedicine part the SUR project will enhance, advance and develop models for conditions pertinent to diabetes, ophthalmology and cardiology. This effort is to build on good success of IIT Kgp in a north eastern state. The 'Clean Ganga Project', a project of national importance and supported by the World Bank and Government of India, of which IIT Kgp is a part, SUR will strive to demonstrate the strength/ utility of IBM H/W and IBM Analytics IIT Kgp SUR builds on an earlier SUR grant we had given in 2005, thus consolidating the IBM investment.

In both the SURs, multiple departments and centers are involved and in both the SURs it is envisioned that we will have opportunity to showcase the cloud technology, advanced analytics and Smarter Planet agenda as it pertains to India.

The IBM Shared University Research (SUR) Awards is a worldwide equipment award program designed to promote research in areas of mutual value and interest to IBM and universities. The SUR Awards program strives to connect the research and researchers at universities with personnel in IBM: in organizations such as IBM Research, IBM Life Sciences, IBM Global Services and our development and product labs. This program is not aimed at supporting a single individual or research project. Rather, the intent is to support and have an impact in an area of significant interest to the university and IBM.

Open Collaborative Research (OCR) program on Smart Grid with IIT Madras and IIT Kharagpur

IBM has signed a research collaboration agreement with IIT Madras and IIT Kharagpur to develop systems that will help power grids become more efficient and resilient. The systems will analyze power grid data for predictive insights. They will also improve grids to enhance productivity and reduce inefficiencies in power consumption. IBM Research India will work with these two premiere institutes to develop open system designs that can boost the potential of Phasor Measurement Units (PMU), a new type of sensor on power grids. The IBM researchers and the students will develop network architectures to collect data from PMUs as well as analytics tools that process the collected data to provide valuable information to the grid operators



IBM Faculty Awards

The IBM Faculty Awards are competitive that are intended to foster collaboration between researchers in leading universities worldwide and employees in IBM research, development, and services organizations and also to promote courseware and curriculum innovation. Faculty Awards are granted annually on a global basis. In the second half of 2010, IBM India UR has been able to secure 4 Faculty Awards and the recipients are Dr Pinaki Mitra (IIT Guwahati), Dr Pabitra Mitra (IIT Kharagpur), Mydhili Nair (MSRIT) and Dr Rahul Marathe (IIT Madras). The technological areas for these recipients predominantly are "information management and analysis" and "Business Transformations and Services Innovations". Congratulations to all four of them!!





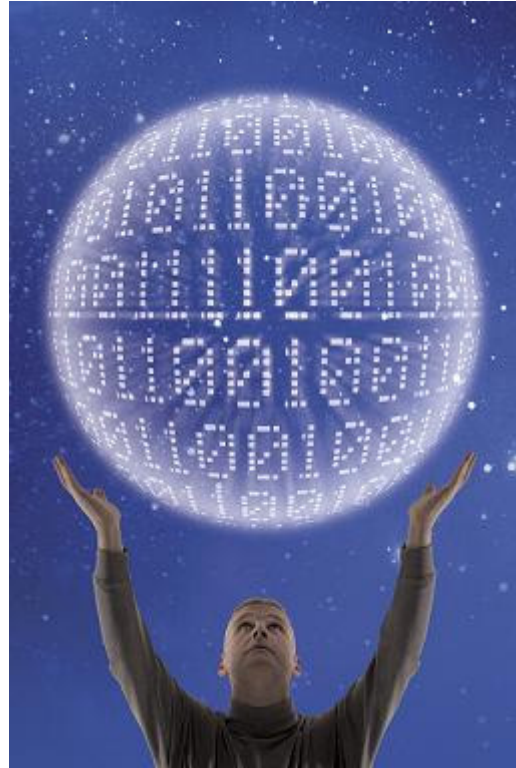
Successful delivery of Webinars in 2H, 2010

For the first time University Relations planned an extensive calendar for technical lectures through WebEx platform at such a large scale, 6 Technology Hubs including Java Technologies, Information on Demand, Services Oriented Architecture, Software Architechting, Enterprise Computing and Advanced Operating Systems & High Performance Computing presented deep dive technical lectures. We have had more than 30 colleges from all regions of India and over 3000 students participated in 40 sessions for this series.

Apart from the technical lectures, we conducted some special sessions, which includes:

- **Intellectual Properties, Patents & Publications** by Dr. Eric Dias, Patent Attorney, IBM India
- **And you thought Services were boring!** by Dr. Manish Gupta, Director, IBM Research India
- **Women Leadership Development;** Women in Technology (WIT) members IBM conducted a special lecture for the diversity students at campus to share the first hand knowledge of how IBM enables women in various ways.

Overall rating received for these lectures are nearly "Excellent". We plan to deliver technical education on such industry relevant topics in future.



Remote Mentoring Program update

In the Phase II, 2010 Remote Mentoring Program, 150 students are selected from more than 500 applications. Selections are made on the basis of project synopsis submitted by these students followed by interviews with project mentor. The students selected in this phase are working on 29 projects.

From past one year remote mentoring program has grown bigger and has become one of the successful ventures from University Relations. More and more students are looking forward to work with us under this program.

Some of the figures shown here might excite you:

- ✓ Total Number of Projects: **115**
- ✓ Total Number of students: **340**
- ✓ Total number of articles published: **2**
- ✓ Papers published/selected: **2**
- ✓ Disclosures : **1**
- ✓ Papers accepted at IBM I-CARE 2010: **3**
- ✓ Total number of colleges Covered: **31**

With one of the projects recently won the Services Innovation Challenge, ICSEM (International Conference on Services in Emerging Markets) and the "Best Demo" award at I-CARE (IBM Collaborative Academia Research Exchange) 2010, we have very high hopes with the projects in this phase.





Here are updates from a few projects which will give you a brief picture of the overall program

Project: Synchronous and Asynchronous Framework for Web Service Discovery and Ranking Based on QoS

College : MSRIT

Mentor Name : Nishant D Kulkarni

"Remote mentoring is a great concept and I am personally benefitted a lot. Being a mentor, students approached me with many challenging problems and technical requirements. However we could not complete the engine but what next. We needed use cases to choose. We decided with Vermi culture, blood bank integration like socio subjects. The low cost web service invocation engine was then used to integrate blood bank to effectively manage blood storage and supply".

This work was showcased at the "Service Innovation Challenge" in 1st International Conference on Services in Emerging Markets. M S Ramaiah Institute of Technology is proud to win the First Place in this contest. This work has also won the "Best Demo" at I-CARE (IBM Collaborative Academia Research Exchange) 2010.

Project: Implementation of Map-Reduce and Load Balancing In a Cloud Environment

College : College of Engineering Guindy

Mentor Name : Kirpal A Venkatesh

Kirpal and the project team installed hadoop an open-source software. The project team tested a sample application in a regular multi node (simulate pc) environment. The project team created an web application using eclipse IDE which helps to search for a keyword in a given file using Map-Reduce technique. Kirpal and the project team performed a study on SaaS and Map-reduce. An article is also published on developerWorks at following link

<http://www.ibm.com/developerworks/cloud/library/cloudmapreduce/index.html>.

Project: Low level System Monitoring and Analysis

College : IIIT Hyderabad

Mentor Name : Chiranjib Sur

Chiranjib is planning to publish a paper with the IIIT H, on remote mentoring ,, Low level System Monitoring and Analysis in the upcoming HiPC student symposium.

Project: Cloud computing for community applications

College : College of Engineering Guindy

Mentors : Ramanathan Sundarrajan and Kishore Kumar

"Has helped build skills on cluster - hw, storage areas of cloud, relationship management with stakeholders" -- Kishore

- Ramanathan and the project team installed eucalyptus open-source software. The project team was vibrant in kurushetra and led to producing the eucalyptus install guide. This team was very knowledgeable, and minimal effort was spent with the team.
- The project team created a ring based database approach. Ramanathan and team also read about cassandra (link) an open source Amazon dynamo storage engine equivalent

Project: MAIL PLUGIN FOR IBM MASHUP CENTER

College : IIT Guwahati

Mentor Name : Girish Sundaram

"A paper has been accepted for the NETs2010 International Conference on Internet Studies Conference to be held in Taiwan between 25-27 Nov, 2010. This paper was the outcome of the University Relations Remote Mentoring project with IIT Guwahati."

<http://conference.academic-journal.org/NETs2010>





Project: KVM Test Framework for Cloud

College : BMSCE /IIT Bhubneshwar

Mentor Name : Supriya Kannery and Team

- “Remote Mentoring program has been very beneficial for my team from various perspectives till now (though we are yet to reach the final results in the RM projects that we initiated)
- These projects helped us to think about the proposed ideas more deeply due to which enhancement of the ideas came up resulting in ip generation.
- Since most of the time consuming activities are done at student's end with the guidance from the local mentor, we are able to execute multiple RM projects at a time, without much effort from IBM mentor's side. This enables implementation of multiple ideas at a time which would have been more effort intensive if done as direct mentoring.
- Since we are able to include multiple mentors into a project, the info sharing between IBM mentors is more (without all mentors in sync, we cannot communicate clearly to the colleges], which results in more useful discussions and better implementation.
- Since multiple colleges are involved at a time, we are expecting to compare the results for the same project and then choose the better implemented one for adoption.”

Rated Published, the project work which started as a problem statement for the students turned in to a potential patent, which was finally adjudged as rated published by the IBM team.

Project: Implementation of Map-Reduce and Load Balancing In a Cloud Environment

College : College of Engineering Guindy

Mentor Name : Kirpal A Venkatesh

· Kirpal and the project team installed hadoop an open-source software. The project team tested a sample application in a regular multi node (simulate pc) environment. The project team created an web application using eclipse IDE which helps to search for a keyword in a given file using Map-Reduce technique. Kirpal and the project team performed a study on SaaS and Map-reduce. An article is also published on developerWorks at following link
<http://www.ibm.com/developerworks/cloud/library/cl-mapreduce/index.html>.

Project: Virtual Block Storage

College : College of Engineering Guindy

Mentor Name : Ramanathan Sundarrajan

- Anna university project team installed eclipse and extended the source code of walrus. The changed code was deployed in the IBM 16 node cluster.
- Ramanathan submitted an abstract article titled “Modified Block Storage for Cloud Eucalyptus platform” in developerWorks for review on may 19th, 2010.
- Ramanathan and team produced a eucalyptus – opensource laaS install guide. Click here to download the document.
- Ramanathan and team conducted a “Cloud computing workshop” in the Kurukshetra(International Conference and Techno Management Festival of Anna University, chennai)
- Ramanathan presented “Setting up the cloud Environment using Eucalyptus” in a private engineering college in chennai. This is as part of their staff development program.
- An article got published at developer works <http://www.ibm.com/developerworks/cloud/library/cl-modblockstore/>.

Some feedback about the program

“This RM project helped me broaden my skills, especially it gave me an opportunity to learn machine learning algorithms and various aggregation techniques”. Sreekanth , Mentor VJTI

“The RM project was an excellent opportunity to hone skills in the areas of Machine learning and data mining. It was fun interacting with the academia and students in particular. Exposure to big data analytics and open source software helped in broadening the scope with respect to products. The project provided a scope to better understand the healthcare domain and players involved thereby helping to tailor specific business usecases for the project”. Sandeep , Mentor VJTI





IBM Campus Ambassadors Announced

IBM University Relations is extremely happy to announce the Campus Ambassadors for 2010-11. IBM Campus Ambassador Program is a voluntary program designed to have a liaison between IBM & Academia to strengthen the collaboration and evangelize cutting edge technologies. Though the program is voluntary, it gives a chance to the students to learn more about industry relevant technologies, know how technologies are evolving and network with IBM Experts. All of these will surely broaden the horizon of the students.

We have received over 200 students from colleges across India applied for this program. University Relations team have reviewed the applications and selected the best student to support the program. 61 students from 34 campuses are appointed as Ambassador for 2010-11, these students will be the advocates of IBM UR programs at their campus and help us to evangelize and execute them.

We congratulate the students selected under this program and look forward to work in future.

List of Ambassadors:

- Dwaipayan Mukherjee, Bengal Engineering And Science University
- Subhro Mukherjee, Bengal Engineering And Science University
- Nipun Jain , BITS-Pilani
- JERY ALTHAF P K, COE-Trivandrum
- PRANNOY C VARGIS , COE-Trivandrum
- NEHA A. PATIL, College of Engineering -Pune
- DEEPAL DHARIWAL, College of Engineering -Pune
- PALLAVI M. MOGHE, Cummins
- Mugdha Shekhar Vichare, Cummins
- Vikas Khurana, IIIT Allahabad
- AWANI BHUSHAN RAI, IIIT Allahabad
- Vasu Gupta, IIT Bhubaneshwar
- Raju Kumar, IIT Kharagpur
- Atul Gupta, IIT Kharagpur
- Amit Dugar, IT-BHU
- Saket Saurabh, IT-BHU
- SAURABH JAIN, MIT COE
- Narendra Kumar, MIT COE
- Suruchi Sharan Sinha, MITS Lakshmangarh
- Bhumika Garg, CSE , MITS Lakshmangarh
- SRIKANTH J, NIE Mysore
- Praveen Kumar, NIE Mysore
- TARUN KUMAR GUPTA, NIT Calicut
- Sujoy Saha, NIT Calicut
- G. P. Krishna Siddartha, NIT Jamshedpur
- SATBEER SINGH LAMBA, NIT Jamshedpur
- Roshni Chandrashekhar, NITK Surathkal
- RAHUL CHOPRA, NIT Kurukshetra
- SONAL BANSAL, NIT Kurukshetra
- Priyanka Mehtani , NIT Rourkela
- Argha Sen , NIT Rourkela
- P.SAI KIRAN, NIT Warangal
- JAYAVARAPU SAI KRISHNA TEJA, NIT Warangal
- SUVIR JAIN, PEC Chandigarh
- Rishil Murukan Mypalli, PESIT Bangaluru
- Saloni Maru, PESIT Bangaluru
- Sanjeev Gopinath V, Sastra University
- Brij Mohan Lal Srivastava, Sastra University
- C. K. SHAMYA, SJCE Mysore
- Dheeraj .S .Shetty, SJCE Mysore
- KUMAR PUSHKAL, VNIT Nagpur
- Sameer Kumar Gupta, VNIT Nagpur
- AKASH KHANDLWAL, IIT Delhi
- Avinash Kumar, IIT Delhi
- Rakesh Malladi, IIT Madras
- Arun Kumar Tripathi, IIT Guwahati
- Sidharth Pipriya, IIT Guwahati
- Hemant Noval, IIT Bombay
- Saurabh Goyal, IIT Bombay
- Sushant Kamath A., BMS College of Engineering, Bangalore
- Yeshwanthi A.C., BMS College of Engineering, Bangalore
- Harish Raddi C S, MSRIT Bangalore
- Prabha P, MSRIT Bangalore
- Vignesh Miriyala, IIIT-Hyderabad
- Ashish Kumar Shah, IIIT-Hyderabad
- Sampath Kumar T, PSG College of Technology
- Kalpana Gupta, IIT Roorkee
- Anish Goyal, IIT Roorkee
- SETHURAM.S., College of Guindy, Anna University
- T. Rakesh, VIT Vellore
- N HIMA BINDU, VIT Vellore





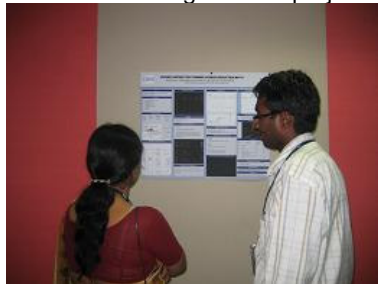
Extreme Blue Internship 2010

The Extreme Blue India program was formally kicked off on 24th May. 47 Interns from 13 top universities of India and 4 Universities from the US became a part of the IBM family. This year there were 12 projects were sponsored in India, 9 from India Software Labs & 3 from Research Division.

The 10 weeks tenure saw the interns go through a rigorous work-schedule. However, there were ample opportunities for learning via technical & management talks by senior IBM leaders, like :

- Talk on *IBM businesses and ISL Portfolios* by Kalpana Margabandhu, Director - Adapters, WPG, WDI development and AIM development in India
- Talk on *career at IBM and Work Life balance* by Srividhya Sireesh, Delivery Project Executive, ITD GD
- Talk on *'Cloud Computing'* by technical leaders of ISL - Ravi Ranjan and Sunil Kc Sreekumari

Extreme Blue Expo: The Extreme Blue expo on Friday, July 23rd turned out to be a great event with leaders like Shanker Annaswamy, *Regional General Manager, IBM India/South Asia*, Dr.Ponani Gopalkrishnan, *Vice President, India Software Lab* and Dr.Chandrasekhar Sripada, *Vice President & Head Human Resources, IBM India/South Asia* visiting us and addressing the gathering. The interns and mentors put a great show with their presentations during the expo. We also got a fantastic response to the walk-through session after the expo, with visitors (from IBM) thronging the venue and interacting with the project-teams.



Research Poster Competition for Research Lab Interns

A poster competition for the research interns at IBM Research – India was organized in July. The poster competition, which started in 2008, is aimed to showcase the intern research projects and give interns an opportunity to get a broader spectrum of research activities at IBM. Amongst a total of 55 posters, four were adjudged the winners:

- I. The OptiHire Problem - Approximation Algorithms & Hardness, Aman Dhesi, B-Tech, IIT Kanpur
- II. Discovering topics and their behaviour from unstructured data, Ashish Kumar Yadav, B-Tech, IIT Kharagpur
- III. Aggregate Traffic Shaping for Video-on-Demand Services in 3G/4G Networks, Anand Seetharam, MS, University of Massachusetts, Amherst
- IV. Cloud Tenant Modelling with Multi-Dimensional Similarity Matching, Lakshmi Ramachandran, PhD, North Carolina State University

Research division has done the biggest internship program ever in 2010 with a total of 98 interns in 2010 from all geographies of the world with 18% diversity.

Roadshow 2010 -TES Interns

On the 16th of August University Relations team held out a fabulous event called "Roadshow 2010 -TES Interns" for the current batch of students doing their internship TES Lab. The event was an ideal one off platform for the interns to present their incredible work to a large section of TES technical community. In all there were 23 poster presentations across the 5 verticals (Asiscs & IP, Processor, SRDC, SEMS and EDA). People started pouring in from the word go and every poster section was crowded with curious IBMers till the closing bell.

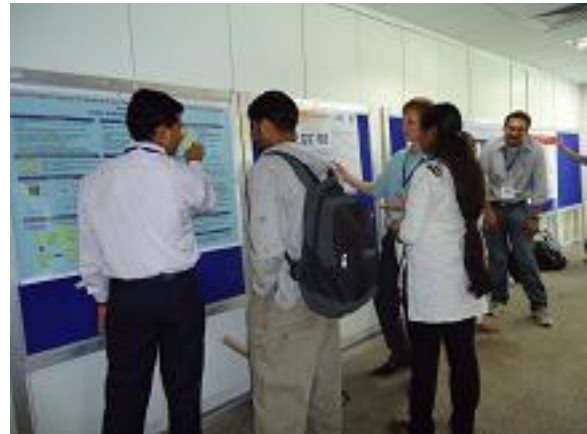
It was not only an opportunity for the interns but also for every IBMer from TES to know the kind and quality of work being executed by our interns. If there was a prize to be awarded for the Best poster then probably all the 23 posters would have been adjudged the Best, such was the competition and standard of each one of them in terms of content as well as presentation. Overall the half a day session was a grand event with something for everyone to take home at the end of it.





I-CARE 2010: IBM Collaborative Academia Research Exchange

Strengthening its presence in the academic community, IBM Research – India organized the IBM Collaborative Academia Research Exchange (I-CARE) in Bangalore on October 22. I-CARE, an annual event started last year, aims to promote collaborative innovation and explores the new ways of fostering a culture of innovation. More than 260 students and academicians from 27 premier technology and management institutions, including Indian Institute of Technology, Indian Institute of Science (IISc), Indian Institute of Management (IIM), and Indian School of Business (ISB), among others, participated in this event. The agenda of the event included poster and demo competitions, a total of 110 submissions were received for the contest out of which 46 entries were selected for final presentation in 4 tracks at the event. A panel of judges evaluated the posters and demos presented at the site decided the following as winners:



Best Posters:

Track - I Services: Service Science, Management, and Engineering

Behavioral drivers of individual and team performance

Suneel Chatla (ISB), Nandita Banerjee (ISB), Amit Nandkeolyar (ISB), Nithya Rajamani (IBM)

Track - II Information Management and Analytics

Towards Efficient Mining of Periodic-Frequent Patterns in Transactional Databases

R. Uday Kiran, Akshat Surana, P. Krishna Reddy (IIIT-Hyderabad)

Track - III Software Engineering and Programming Languages

Verification of Requirement Specification Using Partitioning

K Vasanta Lakshmi (IISc), K V Raghavan (IISc)

Track - IV Distributed, High-Performance, Network & Cyber-physical Systems

Sensor Based Smart Mine Design

Bharat Uday Seth (IIT Madras), Krishna Sivalingam (IIT Madras)

Best Demo

Mobile Telemedicine A Redeemer in Disaster Relief

Mydhili K Nair, Manjunath Amaresh, Anil Kumar, Lalit Kumar, Dheeraj Pai (MSRIT Bangalore)

Workshop also had expert talks, and a panel discussion on “Is India geared up to have Smarter Cities?”





DA OR Workshop 2010

The Business Analytics and Optimization group (<http://www-07.ibm.com/in/research/serviceanalyticsopt.html>) at IBM Research – India organized the 5th edition of its Data analytics and Operations Research Workshop in cooperation with the Department of Computer Science and the Department of Mechanical engineering of Indian Institute of Technology (IIT) Delhi during October 29-30, 2010 at the IIT Delhi campus. The previous editions of the workshop were organized by IBM Research in collaboration with Indian Institute of Technology (Delhi, 2006), Indian School of Business (Hyderabad, 2007 & 2009), Indian Institute of Sciences (Bangalore, 2008). With invited talks and tutorials from leading academicians and researchers from select universities, government organizations and corporate research, the workshop promotes and propagates the science of operations research and data analytics among the practitioner community with a special focus on students from reputed academic institutes. The theme for this year's event was "Smarter Solutions for Smarter Businesses" that is motivated from IBM's Smarter Planet agenda. The workshop agenda consisted of Tutorials and Research Student Symposium on October 29 and invited talks from eminent speakers both from academia and industry on October 30. The keynote talk "Enhancing Enterprise Performance" by Dr. Shiva Kumar, (VP- Enterprise Performance and Industry Analytics, IBM Research, New York) was the highlight of the session. The workshop registered more than 150 students, practitioners, and faculty across the country and awards were given to selected doctoral students for their research work.

Program Link: <http://www.cse.iitd.ac.in/~sdas/ibm-or/>



Workshop on high performance computing in sciences and engineering

IBM India & Jawaharlal Nehru Centre for Advanced Scientific Research organized a one day workshop on high performance computing in sciences and engineering at Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) campus, Bangalore. The Centre is funded by the Department of Science and Technology, Government of India and is a deemed university.

This workshop brought together key scientists from Indian academia, industry and government with IBMers on scientific applications of High Performance computing. IBM Fellow and VP power systems, Dr. Bradley McCredie, gave the keynote address followed by several presentations on the applications of HPC in Biology, Chemistry, Physics, Material Science, Fluid dynamics, Earth science and Nanotechnology. The workshop has laid a platform for increased interaction with Indian academia/government/industry. Kota Murali from ISTL- TES, Subram Natarajan, IBM STG S&D and Umesh Waghmare, JNCASR were co-conveners of this workshop.

High Performance Computing Road show conducted by University Relations

Edvin V Kollanoor, (STG Software University Relations Lead) and Ganesan Narayanasamy, (Manager, HPC Development, India Software Labs) conducted a High Performance Computing Road show at Sangam Hotel, Trichi on 8th September. The event was co-sponsored by the IBM Marketing team and IBM India University Relations team. NIT Trichi, Bharathidasan University, SASTRA University, Bishop Heber College, MIET Engineering College, Nehru Memorial College, Oxford Engineering College, P R Engineering College, MAM College of Engineering, Trichi Engineering College and several others colleges in the area participated in this event. During the roadshow Ganesan Narayanasamy talked about IBM High Performance Computing and how it can help colleges advance their research portfolio and develop business solutions relevant to a smarter planet. Edvin V Kollanoor spoke about IBM's University Relations agenda and how it has been helping several colleges across india to bridge the technology gap. A Q&A session was also conducted at the end of the session where several questions about IBM's technical capabilities were explained.





IIIT - Bangalore teaches Information on Demand

IIIT- Bangalore has recently adopted an elective course on Information on Demand. This course is offered to the MTech 2nd year students as an Elective course for 6 months duration from 9th August 2010 and is named as **Enterprise Information Management(EIM)**. Around 50 students attended the introductory session delivered by Rajavel Sekaran, and 28 students enrolled for this elective course.

Rupa N Rao is co-ordinating this elective course and is the SPOC for the SMEs, students and professor for all the activities. As part of this course, around 12 lectures were delivered by the SMEs on various Infosphere products -

Developments in Relational Databases and PureXML: Jimson John and Khurram Faraaz

Enterprise Content Management : Suma C Shastry

Data Warehousing : Shekhar Gujjar

Trends in Data Replication & CDC : Venugopal M Narayanareddy

Integrated Data Management - IBM Optim : Srinivas R Mangi

Business Intelligence : Srinivas Gowda

Applied Intelligence - InfoSphere Traceability Server : Nisanth M Simon

Applied Intelligence - InfoSphere Identity Insight : Manu Kuchal

Applied Intelligence - InfoSphere Mashup Centre : Roopa Vedagiri and Sunil Kumar Perla

Information Integration and Metadata Management : Suresh Tirumalai Shetti

Students are being evaluated based on their scribing assignments, mid-term and final examination as well as projects undertaken. Apart from delivering the lectures, SMEs from IBM are assisting in student evaluation, they were also responsible for setting up the examination paper for their topics and correction of the same.

System Integration Projects related to Informix, Cognos and Mashup were provided. Mentors for each of the projects were identified and the students were guided by these mentors.

Informix: Dhanashree Kudgavkar, Prasanna Mathada & Harshavardhan Changappa have helped conducting the session and providing hands-on to the students.

Cognos : Sowmyashree H and Yogendra K Srivatsava conducted a hands-on session for these students.

Mashup : Senthil helped these students with Mashup hands-on as well.

Following SMEs have mentored the student projects at IIITB

1. Senthil G Kumar - Mashup project
2. Harshavardhan Changappa - Informix Project
3. Raviprasad N. Pentakota - Informix Project
4. Santosh Hegde - Informix Project
5. Manoj Ghogale - Informix Project
6. Ramesh G Srinivasan - Informix Project
7. Radhika Gadde - Informix Project

Apart from these lectures and projects, interacted with Himanshu, Shilpa and Mayank for conduction of the **DB2 Academic workshop and Certification program** for the IIITB students. Around 55 students participated in the DB2 Academic Workshop and around 40 students who took the certification have cleared the same. Most of the EIM students have taken up the certification and cleared it.

This course will be completed during December 2010. We have received good feed back from Professor & students for these sessions.





IBM Delivered lectures at IIIT-Bangalore

Anshu Jain from IRL has delivered lectures titled "Understanding Framework Architectures" and "Overview of Eclipse Rich Client Platform" as a part of the "Design Patterns" and "Object-Oriented Analysis and Design" courses for the M.Tech class at IIIT-Bangalore.

Advanced Operating System Course Implemented in SASTRA University

IBM STG University Relations team has completed the first phase of Faculty Enablement programs at SASTRA University. The advanced Operating Systems course adopted in SASTRA covers Kernel Overview, Process Management, IPC, File Systems, Memory Management, Operating System Virtualisation, RAS Security, Capacity on Demand, Work load partitions etc from an AIX context. Sowmya Vijayalakshmi, Mallesh Lepakshaiah, Madhusudan Kandasamy, R Vidya and Kiran Grover were part of the team who developed and implemented the course at SASTRA. The University is also actively participating in all the Webex lectures and has also been selected as an institute for remote mentoring projects. IBM STG Team also conducted written tests, interviews and selected three candidates for working in IBM India STG Lab.

Database Management Course at IISc

Prasad Deshpande at IBM Research - India completed teaching a graduate level course in Database Management Systems at Indian Institute of Science, Bangalore in the August semester. The course covered fundamental research papers in Database systems covering a variety of topics including Query Processing and Optimization, Transaction Management, Distributed Databases, Data Mining, Data Warehousing, Semi-structured Databases, Main memory Databases and Probabilistic Databases. It was a full course attended by 26 MS and PhD students at IISc.

DB2 Certification at IIIT Bangalore

IBM scheduled a 3-day DB2 Academic Workshop @ IIITB campus on 22nd, 23rd and 24th Oct. with support from the AI team (Shilpa HG and others). Total of 55 students attended this workshop and around 40 students took the DB2 Certification on 26th Oct and it was a cent-percent results. Remaining 15 students were scheduled to take the examinations during first week of November.

IBM supports curriculum at VJTI

IBM India is supporting following curriculum at VJTI:

- Dataware house
- Data mining

As a part of this we are currently helping VJTI in Dataware house software installation and configuration. Which will be used in their lab curriculum. IBM team including Charu Agarwal, Anushka Chandrababu, Geetha S Pullipaty & Pallavi Bansal is helping in this initiative.

Elective course on Storage Virtualization in College of Engineering Pune

Storage group at IBM has been running an elective course on Storage Virtualization at CoEP for past 2 years. This year also we are delivering the course for the period of Jul-Oct 2010. We have also managed to collaborate with other storage companies in Pune like Symantec, LSI and Qlogic for this initiative. This has been very fruitful engagement both for students and for IBM. We have been able to create interest in student community for storage technologies and IBM's product portfolio in this space.

IBM Teaches Advanced Database Management Concepts at University of Pune

Nilesh F Jainpure and Sudhir Titirmare from IBM have taught Advanced Database Management Concepts course for M. Sc. (Scientific Computing) course held at University of Pune. Nilesh and Sudhir have also prepared examination paper for mid semester 1, 2, 3, and final semester exam. They completed entire syllabus for ADMBS for the current year and also conducted Oral exam for ADMBS for the students enrolled in the course.

Advanced DBMS Workshop at RVCE

IBM organized an advanced DBMS workshop at RVCE on Oct 8 for M-Tech students at campus. Abhigyan Agrawal & Praveen Devarao conducted the whole workshop covering following topics:

- Installation of DB2
- CLOB/BLOB handling
- Multi-valued Attributes and nested tables
- Triggers

Workshop was very successful and Dr. G. Shobha, Dean PG Studies (CSE & ISE) thanked IBM team for this useful session for the students





Tivoli team conducted learning session at PEC Chandigarh

Amit Aherao from IBM Tivoli team, held a two days session for post graduate (Mater of Engineering in Computer Science) students and their faculties at Punjab Engineering College, Chandigarh under University Relationship initiative. Session was arranged for two days (27th-28th Aug 2010) on "Key Security Technologies" topic under "Recent trends in Information Technology" subject at PEC, Chandigarh. Session was very interactive and was well received by post graduate students. Audience got an overview and idea on how different Security Techniques are implemented in various business scenarios.

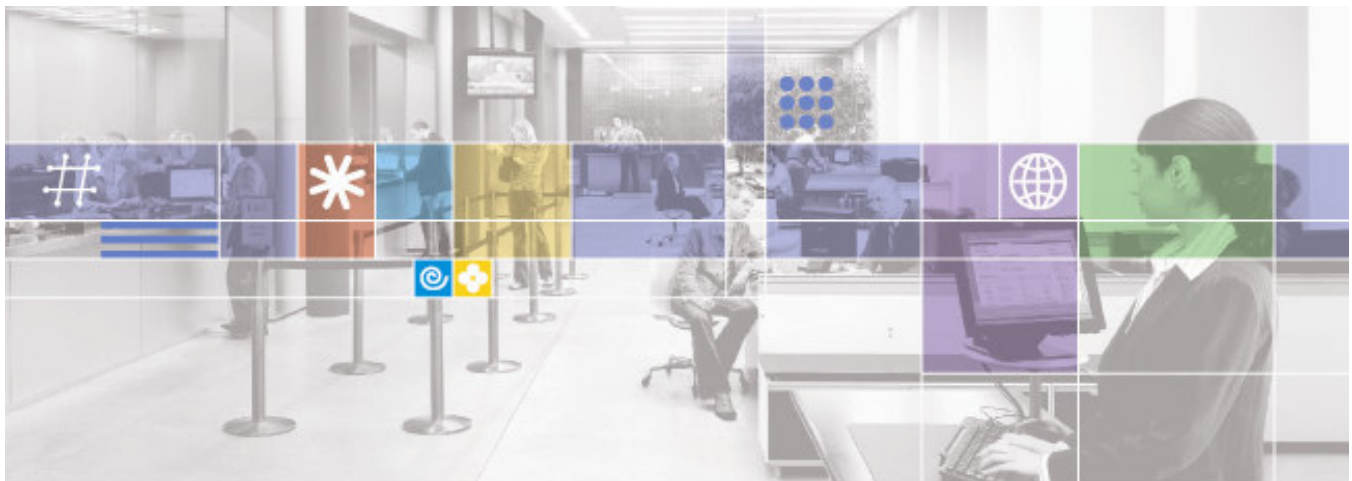
Amit covered following Key topics:

1. Threats, attack and security details.
2. Encryption Techniques and Cryptography.
3. Application & Data Security.
4. Biometrics concepts and architecture, challenges in Biometrics.
5. Privacy Preserving Access Control. Authentication and Authorization concepts.
6. Cyber Crimes and Cyber Laws concepts.
7. Security Threats, Network Threats.
8. Intrusion Detection and Prevention system concepts.

He, additionally covered:

1. IBM Tivoli Security Portfolio details.
2. IBM's state of Security on Smarter Planet.
3. IBM Security Framework.
4. IBM Security Solution Focus Areas.
5. Security Challenges in Unix Environment and the IBM solution to it.

Following this, Students had assignments on the relative topics and later they are evaluated per case basis.



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Women in Engineering at SASTRA

Women in Engineering (WIE), chapter of IEEE, was launched by **IBM India** at **SASTRA** on **August 28th 2010** with a mission to inspire and empower young women in the fields of Engineering and Technology. Around 350 women students participated in the half day long workshop.



The WIE workshop began with the **Guest Speaker session** delivered by **Premalatha M Nair**, Program Director, Linux Technology Center and Women in Technology Lead, IBM India Chapter. She talked about **Women in Workforce, IBM's commitment to Gender diversity and the Success Mantras for women leaders**. This was followed by sessions on **"Leadership Competencies and Career Development"** by **Sandhya Venugopala** and **Sowmya Vijayalakshmi**, Technical Leads, ISL Bangalore. **Dr. M.Vijayalakshmi**, Associate Dean, School of Chemical and Biotechnology, SASTRA presented statistics on **"Women in Research"** indicating that research is driven by passion and is a very respectable, achievable and desirable career path. The talk also highlighted the new policies initiated by the Indian Government and the Research Councils to encourage women inclined towards research. The program concluded on a strong note with the **Panel Discussion on Women in Engineering and Technology** which provided lot of insight to women students about perceived barriers at work, inclusive work environment and work-life balance.

IBM also conducted a **poster contest** for women students centered on the agenda of **"Smarter Planet"**. Top 15 ideas were selected and the winners awarded with prizes and certificates at the closing ceremony.

Think Saturday : Technical Talk at PESIT

Manoj Dusanapudu visited PESIT for their Think Saturday event to deliver a technical talk, he started with a good introduction, with basic concepts which helped the students to concentrate on the talk with less trouble. He explained how the processors have evolved over the years and the challenges designers face. He explained in detail about the jargons used in this field and the vast technology growing in the processor world. He also advised on many topics which the students could work as research projects. Students were amazed to be able to relate some of their text book topics being used in the real world and the importance of them in the silicon industry.

As promised, Manoj had virtually built a processor with the students at the end of 90 mins. Batches of 20-30 students stayed back through their lunch hour to talk to Manoj and clarify their doubts. Few students doing project on multi-core discussed with Manoj and exchanged e-mail ids for future contact

Technical talk at SASTRA

R.D.Prabhu - SRDC, Bangalore, was invited by Prof. John Bosco Balaguru - Associate Dean (Research), School of Electrical and Electronics Engineering, SASTRA University on October 11th, 2010, to deliver a talk titled " An overview of IBM Technologies with a focus on Semiconductor Research and Development ". Prabhu traced the evolution of IBM Technologies that addressed many of the market demands in computing and communications. Innovations at various stages of development of the technologies - ranging from process to system design - were highlighted. The talk also zoomed onto the activities of SRDC, Bangalore. IBM's smarter planet philosophy and initiatives were also outlined in the talk. This talk was aimed at informing as many young, enthusiastic and technically inclined budding professionals of SASTRA about the many possible avenues with IBM they may explore in their quest for dream jobs and jobs that will whet their appetite for technical challenges! This talk was well attended by the students and faculty of the EE department of SASTRA.



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Faculty Enablement Program at SSIT College, Tumkur

IBM University Relations successfully completed 3 days faculty development workshop on DataMining and Datawarehouse by IBMers at SSIT College, Tumkur. Around 36 faculties from 3 colleges participated in the workshop and got overwhelming response from the faculties. With this workshop college is confident to use IBM Infosphere Warehouse for DataMining and Datawarehouse Lab.

Uma Devi, Hub Leader for Information on Demand played an important role in identifying the SMEs and incorporating IBM technology to support the Lab requirements and the DW team including Charu Agarwal, Anuska Chandrababu, Sowmya S Halappa, Pallavi Bansal and Yogendra K Srivastava helped conducting the wonderful workshop. The even has been a huge success and now the college is requesting more such workshops in future.

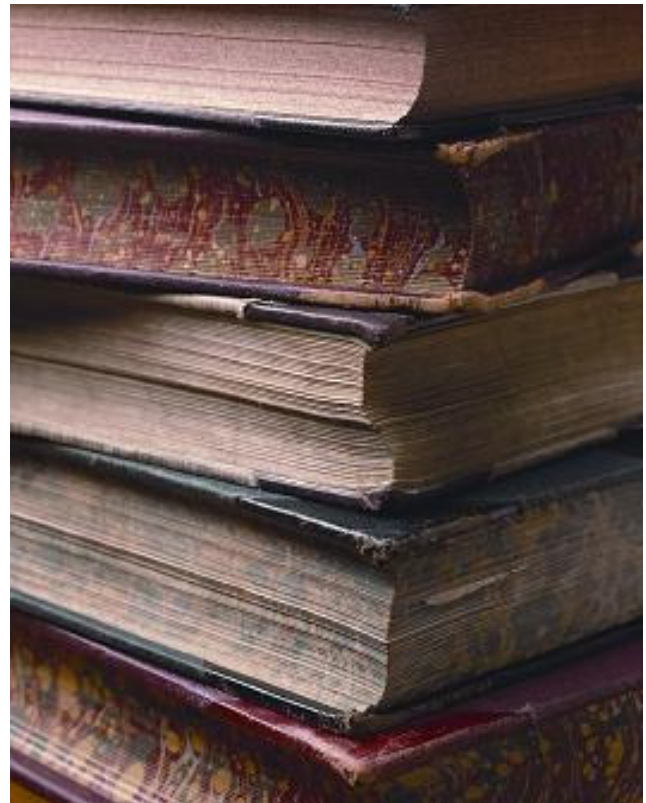
Faculty Enablement Workshop on IOD at VIT

IBM University Relations conducted a Faculty Enablement Workshop at VIT University, Vellore, Tamilnadu during Sep 8-9, 2010 on Information on Demand. College has accepted to introduce IOD in their curricula and hence the workshop was conducted in the first week of September. Vellore Institute of Technology known as VIT, comprises of seven schools offering 17 undergraduate programmes and 28 post graduate programmes. A total of 53 faculties attended this session.

Feedback received from VIT coordinator was excellent, faculties got an insight into IOD, the IOD stack and a good overview of the various subjects that were covered during these 2 days. They now looking forward to hands-on sessions and in-depth understanding of these topics. The plan is for the faculty members to go through the various links / docs that were provided and connect w/SMEs, through mail or have remote sessions to enhance their understanding.

Faculty Enablement Workshop at VJTI Mumbai

VJTI recently adopted IBM's curriculum on Analytics and Data Mining. In continuation of this collaborative journey, IBM conducted a **Faculty Enrichment Workshop** hosted by the institute from Sep 2 to 4, 2010. The intent of this workshop was to enable the faculty members of VJTI and neighbouring engineering colleges to teach and conduct practicals on Data Mining using IBM's Infosphere Warehouse product. This was the first such program in VJTI and was received with great enthusiasm and energy by the HOD, staff and key faculty of the college. The event was kicked off by **Prof Narayankhedkar, Director (VJTI)** and HOD of MCA Prof Sane. Samiran Ghosh, the IBM member on VJTI BoS, was among the key note speaker and he also had the honor of inaugurating VJTI's new computer lab on 2nd Sep. Special thanks to Charu Agarwal, Ramalingam Srinivasan and Rajib Bhattacharya from the IOD hub who delivered this training.





IBM STG Lab collaborates with University of Melbourne

University of Melbourne is a public university located in Melbourne, Australia and it is ranked among the top universities in Australia and the world. Among Australian universities, it claims a leading position in Education, Engineering, Arts, Law and Medicine. Melbourne University is the second largest research organization in Australia. It has consistently ranked first or second on the major national research indicators which are used by the Australian Government to allocate public funds for research and training infrastructure. The University of Melbourne and IBM have signed agreement to establish an IBM Life Sciences Research Collaboratory at the University of Melbourne. The agreement establishes a five year contract in which IBM Watson Laboratory researchers and researchers from the University and local Australian institutes will collaborate on Life Sciences research. The collaboratory will focus on:

- Medical Imaging: high performance computers are used to analyze images from the synchrotron and MRI machines
- Medical Genomics: the identification of combinations of genes implicated in disease, and the ability to predict susceptibility to disease from an individual's genome and history
- Structural Biology: understanding the structure and shape of biological macromolecules, which is fundamental to drug design
- Integrated Systems Biology: understanding and model



IBM delivered one rack iDataplex and two racks Blue Gene/P to the Institute last month. In 2012 IBM will supply 4 racks Blue Gene/Q, technologies with a total compute power in excess of 800 Teraflops. We believe that in performance capability terms this will put the University in the top 5 computational facilities worldwide engaged in Life Sciences computational research. Ganesan Narayanasamy and Velmayil Sermakkani from the STG High Performance Computing worked on the idataplex cluster enablement and Velmayil Sermakkani travelled to Australia and successfully implemented the idataplex cluster and General Parallel File System (GPFS). The university was extremely satisfied with the outcome of the engagement. They have also expressed interest in IBM curriculum subjects. The idataplex cluster will not only reduce the floor space but also reduce the power consumption. This successful idataplex cluster deployment in Australia will help in enabling similar such idataplex enablement in india as well as south asia pacific region.



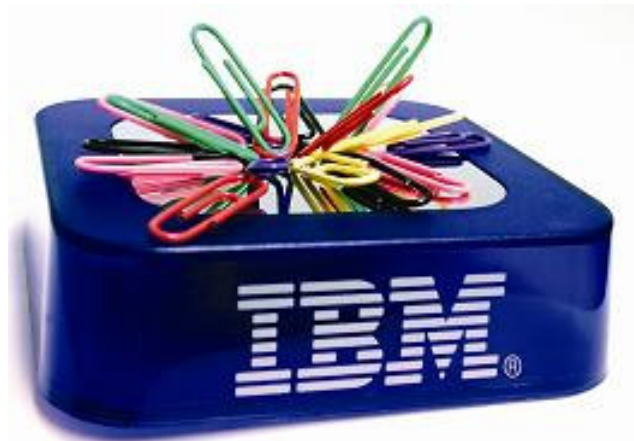


IBM participated at MSMEs Conference

Dr. Bhooshan Kelkar was invited for the "*MSMEs (Micro, Small, Medium Enterprises) – Gearing up to Global Competitiveness*" conference held in Mumbai on 26-27 August. The conference was organized by the MEDC (Maharashtra Economic Development Council), Govt. of Maharashtra, and MSME Institute, Govt. of India. Bhooshan was an invited panelist for the session titled "*MSMEs-Technology, Innovation and Global Opportunities*". Bhooshan talked about the need for technology enabled industry-academia interaction, examples of technology and innovation empowering MSMEs, role of the demographic dividend and the importance of soft skills.

MITS invited IBM to their Board of Study

MITS Lakshnagar has officially announced the appointment of Monica Katoch in their Board of Studies in November. Monika is already associated with the college as Campus Relationship Manager and this would be a good platform for us to enable curriculum enhancement at MITS and would help us further strengthen our relationship at this *diversity* institute. University Relations congratulate Monika for this great achievement.



Faculty Residency Program

IBM UR with the support from ISL Tech Vitality Program launched the Summer Faculty Residency program in July. The objective of the program is to host the interested faculty in IBM premises for 2-4 weeks for working closely with SMEs on various UR offerings. Further, the faculty will have access to IBM information which could generate new ideas for the collaboration with the academia. The faculty is expected to become an IBM champion and influencer at the end of the Residency. The response to the Residency Program has been encouraging and University Relations plans to run it in coming years.



IBM participated at Innovation in Education Conference

Dr. Manish Gupta, Director IBM Research-India, represented IBM India University Relations, as an invited panelist for the "*Innovation in Education*" conference by the Education Times, The Times of India Group. The conference was held in Delhi on 26th August, 2010. Dr. Manish Gupta was an invited panelist for two sessions, very core to the University Relations. One session was "*Industry Academia Partnerships*" and the other was "*Bridging the Digital Divide*". The conference was well attended and the audience comprised 150 key decision makers from Industry and Academia.

The Times of India (Delhi edition) carried a special supplement subsequently on 9th September on Innovation in Education. It featured a thought leadership article by Dr. Manish Gupta on the critical need of industry-academia collaboration.

Dr. Bhooshan Kelkar inaugurated the "IPR meets IT" Workshop

Dr. Bhooshan Kelkar, Country Manager, University Relations was invited as a Chief Guest for "IPR meets IT" workshop in Delhi by Delhi Technological University on 25th October. In this two day workshop, Dr. Bhooshan presented on IPR, patents, trademarks, copyrights and publications. He also explained to the audience on what all cannot be patented including discoveries of laws of nature, production of films, music etc. and computer programmes (softwares) to mention some.

IIT Indore invited IBM for an Industry-Academia interaction

IIT Indore had invited IBM to initiate an industry-academia interaction. Dr. Bhooshan Kelkar, Country Manager, University Relations represented IBM at this meet and talked to the students and local press on 26th October. He spoke on IPR, patents, trademarks, copyrights, publications etc. and how students can make their career with paper publishing and patenting. Dr. Bhooshan spoke about the UR programs we are currently offering at the campus and offered support if students are interested to work towards publishing and patents. Students were very excited for the first ever industry visit at the campus.



IBM conducted Research Days at College of Engineering Roorkee, IIIT-Hyderabad, IIT Kharagpur & IIT Kanpur

IBM Research conducted research days on various topics at College of Engineering, Roorkee, IIIT-Hyderabad, IIT Kharagpur and IIT Kanpur. The objectives of these events were to showcase the research trends from both industry & academia and look out for the opportunities to collaborate.

IBM-COER Research Day held at College of Engineering Roorkee on 18 Sept 2010, it was attended by over 400 students from COER, IIT Roorkee and 4 other engineering colleges in Roorkee. The program included research talks by IBMers, COER faculty and IIT faculty. There was also a poster and demo session where students showcased their final year projects including the projects being done in collaboration with IBM in summer and now ongoing as BTech projects.

This workshop covered following topics:

- Dr. L. Venkata Subramaniam (Manager, IBM): Mobile Phones as Information Devices
Vishal Batra (Senior Engineer, IBM): Embedded Analytics
- Dr. Ishan Ranjan (Director, AITM): Multicore Programming
Dr. Debashish Ghosh (Assoc Prof, IIT Roorkee): Image Processing for Traffic Management and Planning
Dr. Ankush Mittal (Dean, COER): Collaborative work with IBM Research Lab, Report and Future Plans

IIIT-Hyderabad: IBM covered the areas of Information Extraction, Speech Technologies, Mobile Solutions, Cloud Computing and Services Science. From IBM Dr. Raghuram Krishnapuram, Dr. Gopal Pingali, Dr. Ashish Verma, Dr. Krishna Kummamuru and Shalini Kapoor made presentations. IIIT-H have covered Speech, Machine Translation, Information Extraction and an overview of other areas of research at their institute. This event has led to the discussion to collaborate further in Natural language processing (machine translation, information extraction, speech), services/solutions for emerging markets, and cloud computing related areas.

IIT Kharagpur: IBM Research Day at IIT Kharagpur was organized on Friday, November 12, 2010. Following areas of interest were identified for the workshop.

Smarter Planet: *there is some existing collaboration between IBM and the EE department of the Institute in this domain, and hence it was a natural choice.*

Cloud Computing: *the faculty members in the CSE department expressed interest in this domain as an emerging area of research they are interested to work in.*

Team of 5 researchers including Dr. Shivkumar Kalyanaraman, Dr. Gopal Pingali, Dr. Jagabondhu Hazra, Akshat Verma, Dr. Nilanjan Banerjee, Dr. Chumki Basu and Dr. Debapriyo Majumdar participated and presented talks in the workshop. Eleven faculty members from IIT Kharagpur including Prof. Amit Patra (EE), Prof. A K Sinha (EE), Prof. P K Pandey (Water Resource Management), Prof. D J Sen (Water Resource Management), Prof. Pabitra Mitra (CSE), Prof. Niloy Ganguly (CSE), Prof. Chitta Ranjan Mandal (CSE), Prof. Rajat Subhra Chakraborty (CSE), Prof. Arobinda Gupta (CSE), Prof. S K Ghosh (SIT) and Prof. Shamik Sural (SIT) were present in the workshop and delivered talks.

The overall response from the students was very encouraging. We had about 100 participant in this workshop. Most of the talks took longer than expected because of several questions from the students which meant they were well involved in the topics. During and after the lunch, several students approached with queries regarding our work and internship or job openings in IBM Research India.

IIT Kanpur: IBM Research and IIT Kanpur Research Exchange went off really well with 80 B-Tech/M-Tech/PhD students participation through out the workshop. Feedback from students was excellent and they look forward to participate in such research workshops in future.

Following talks were presented during the workshop:

Track - I (Systems Management, Compilers and Algorithms)

- On the arithmetic complexity of Euler function, *Prof. Manindra Agrawal*
- Managing Shared and Dynamic Infrastructures, *Manish Gupta*
- Approximating decision trees for entity identification, *Venkat Chakravarthy*
- High Throughput Memory Efficient Data Redundancy Removal Algorithm, *Souvik Bhattacharjee*





- Shortest paths in planar graphs: Handling vertex failure made easy, *Prof. Surender Baswana*
 - Secure storage and data sharing, *Prof. Rajat Moona*
 - Leveraging Speculation for Performance, *Prof. Subhajit Roy*
- Track - II (Solutions for Smarter Planet)
- Smart Cities with Effective Transportation in Emerging Geographies, *Biplav Srivastava,*
 - Agropedia - an ecosystem for agriculture knowledge management, *Prof. TV Prabhakar*
 - Organizations of the Future: Technical Challenge, *Manish Gupta*





University Relations Team

UR Collaboration Platform
IBM Technical Contest
Remote Mentoring
Center for Advanced Studies (CAS)
Shared University Research Grants (SUR)
Faculty Awards
Curriculum Consultation
Academic Initiative & developerWorks

Devkant Aggarwal
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Sudar Oli
Himanshu Goyal

To contact any of the above, you can drop a note to India University Relations Cell at ibmindur@in.ibm.com with the contact name and purpose in the subject line.

Contact Information

Email: ibmindur@in.ibm.com

Links:

UR Web:

- www.ibm.com/in/ur
- www.ibm.com/university

Academic Initiative:

- www.ibm.com/in/academicinitiative
- www.ibm.com/developerworks/university/academicinitiative

CAS:

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