

THE IITG MONITOR



Indian Institute of Technology Guwahati

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WiSSAP 2011

IIT Guwahati organised the **Winter School on Speech and Audio Processing** (WiSSAP 2011) during 8-11 January 2011. WiSSAP was started with an aim to provide a regular forum for research students, faculty, scientists and engineers working in the area of speech and audio processing for exchanging ideas and enhancing knowledge. WiSSAP-2011 is the sixth one in the series, following the very successful earlier winter schools focusing on different topics in these areas.

The focus of WiSSAP-2011 was on Speech Enhancement, a challenging area of research. It refers to vast collection of techniques developed over last four decades with the aim either to improve the perceived quality of speech or to improve its intelligibility. With the expansion of mobile telephony, the challenges in this area have grown and so has the research activity.

The school featured tutorial lectures by active researchers in this field covering the fundamental topics in speech enhancement. Invited international experts like Prof. Birger Kollmeier, Head, Medical Physics Section, Carl von Ossietzky University of Oldenburg, Germany; Prof. B. Yegnanarayana, Microsoft Chair, Speech and Vision laboratory, IIIT Hyderabad, Hyderabad;

Prof. Walter Kellermann, Chair of Multimedia Communications and Signal Processing, University of Erlangen-Nuremberg, Germany discussed in-depth the latest research and the new research directions in this area. There were evening sessions for



Invited scholars on the dias, at the inaugural function

presentations and demos from researchers from industry and academia, interaction with experts and discussions on open problems in this area.

Prof. S. Dandapat; Dr. S. R. M. Prasanna, Associate Professor; **Dr. R. Sinha**, Associate Professor and **Mr. L. N. Sharma**, Scientific Officer of the Department of Electronics and Electrical Engineering were the members of the local organising committee of WiSSAP-2011.

Seminar/Conference/Workshop/Invited Talk Organised

Civil Engineering

Dr. Subhru Mitra, Assistant Professor, University of North Texas at Dallas delivered a lecture on “Stochastic trunk routing and mode choice model” on 6 January 2011.

Prof. Hemanta Hazarika, Kyushu University, Japan delivered a lecture on “Sustainable construction – few recent developments in Japan” on 24 January 2011.

Inception workshop on “Mathematical modelling of the river Brahmaputra with emphasis on climate change” was conducted by **Prof. A. K. Sarma** during 31 January - 1 February 2011 with financial support from the Ministry of Water Resources, Govt. of Assam. The first meeting of Technical Working Group (TWG) of the same project was held on 23 March 2011.

A QIP **short-term course** was held on “Infrastructure development and construction management” during 17-21 January 2011, **Dr. L. Boeing Singh** and **Dr. Bulu Pradhan**, Assistant Professor, were the course co-ordinators.

Humanities and Social Sciences

The 7th lecture of the **Annual Lecture Series** was delivered by **Prof. Paula Richman**, Danforth Professor of South Asian Religions at Oberlin College in Ohio, USA on “The Ramayana Tradition” on 21 January 2011.

The 8th lecture of the **Annual Lecture Series** was delivered by **Prof. Pramod Talgeri**, Vice-Chancellor, India International Multiversity, on “Dialectics of Hegel” on 28 February 2011.

Prof. Paul Joseph, Sociology Department, Peace and Justice Studies Programme, Tufts University, Medford, delivered a talk on “Media coverage of the wars in Iraq and Afghanistan” on 7 February 2011.

A **short-term course** on Research Methodology was organised during 12-18 March 2011. It was sponsored by Indian Council for Social Science Research (ICSSR). Participants from the Institute as well from other institutes of the country took part in the course. **Dr. Sawmya Ray**, Assistant Professor, was the convener of the short term course.

Mathematics

Dr. John M. Murray, School of Mathematics and Statistics and National Centre in HIV Epidemiology and Clinical Research University of New South Wales, Sydney, Australia, presented a seminar titled “How long does human immuno deficiency virus take to complete its infection cycle of cells?” on 10 February 2011.

A technical confluence **DIMENSION 2011** was organised by the students’ body of the Department during 12-13 March 2011. The two-day event had various programmes involving cryptography, financial modelling, mathematical modelling, ETF trading, economic modelling and steganography.

Centre for Energy

A **training programme** on turn key workers on biogas technology, BDTC, was organised during 8-28 March 2011. The programme was sponsored by Ministry of New and Renewable Energy.

Mr. Biswajit Ray of the school of Electrical and Computer Engineering, Purdue University, West Lafayette, Indiana presented a talk on “Organic solar cell: modelling, optimisation and reliability” on 10 January 2011.

Prof. Swapan Kumar Mazumder of IIM Shillong presented a talk on “Framework for green management” on 28 January 2011.

Dr. Jayanta Bishwa Sarma, a renowned physician from Assam serving in the United Kingdom delivered a talk on “Cariograms – Map according to the subject of interest” on 4 February 2011.

Centre for the Environment

Dr. Pernille Gooch, Lund University, Sweden, delivered an invited talk on “Risk, society and environmental discourse” on 17 March 2011.

Dr. Sudip Mitra, Jawaharlal Nehru University, New Delhi, presented an invited talk on “Water management for mitigating greenhouse gases from rice paddy agriculture systems” under IITG-DBT Biotech Hub Invited Lecture Series on 17 March 2011



Participants of the short-term course on Research Methodology

An International Conference on '**Climate Change and Water: Assessing Vulnerability, Impact, and Adaptation in the Eastern Himalayas**' was organised by Department of Humanities and Social Sciences during 3-5 January 2011. Distinguished scholars from various organisations participated in the conference. Dr. David Syiemlieh, Pro Vice-Chancellor, North Eastern Hill University, Meghalaya, was the distinguished guest and Dr. Prodipto Ghosh, Former Secretary, Ministry of Environment and Forests, Govt of India's Representative in the Global Climate Negotiations, was the keynote speaker. The conference was supported by North East Council (NEC), Oil India Limited (OIL) and Indian Council for Social Science Research (ICSSR). It was co-ordinated by **Dr. Anamika Barua**, Assistant Professor, and **Prof. A. N. S. Ahmed** of the Department of Humanities and Social Sciences.



Participants of the International Conference on Climate Change and Water

New Projects Started

Biotechnology

Title: Single molecule fluorescence investigations on the mechanism of lysozyme aggregation and RNA helicase activity

Sponsor: Department of Biotechnology under twinning programme for North-East

Principal Investigator: Prof. R. Swaminathan

Civil Engineering

Title: To strengthen the research activities in the area of Structural Engineering and Water Resources

Sponsor: SERC, DST (under FIST Programme)

Principal Investigator: Head, Dept. of Civil Engineering

Chemical Engineering

Title: Concentration of biogas slurry to preserve microorganisms in the inoculum by novel separation techniques

Sponsor: Defence Research Laboratory (DRDO), Tezpur

Principal Investigator: Dr. K. Mohanty

Title: Optimised production of bioethanol and biohydrogen from lignocellulosic biomass in a fluidised bed reactor

Sponsor: CSIR

Principal Investigator: Dr. K. Mohanty

Title: Sub/supercritical water pretreatment of lignocellulosic biomass for bioconversion to ethanol

Sponsor: Department of Science and Technology

Principal Investigator: Dr. Vaibhav V. Goud

Mechanical Engineering

Title: Development of a 'plug-n-play' microfluidic research

platform and novel approaches to mixing, droplet, particle separation and pumping at micro-scale

Sponsor: Fast Track Scheme for Young Scientists, Department of Science and Technology

Principal Investigator: Dr. A. K. Sen

Centre for Nanotechnology

Title: External field driven flow induced micro/nano scale patterning, mixing, heat and mass transfer in micro/nano fluidic devices

Sponsor: SERC, Department of Science and Technology

Principal Investigator: Dr. D. Bandyopadhyay

Film Festival Organised



The Department of Design organised screenings of a few world movies during 31 January - 3 February 2011 as part of the Third CineASA Guwahati International Film Festival 2011. The movies were Daayen Ya Baayen, One Week, Not One Less, More Than Anything in the World, Mother, Voces Innocentes (Innocent Voices), No One Knows About Persian Cats and Four Minutes. The screenings were well attended by students and faculty alike.

Publications (Research Journal/Book/Book Chapter)

Research Journal

Biotechnology

Nandini Sarkar, Manjeet Kumar and **Vikash Kumar Dubey**
"Effect of sodium tetrathionate on amyloid fibril: Insight in to the role of disulfide bond in amyloid progression *Biochimie*", *Biochimie*, DOI 10.1016/j.biochi.2011.02.006, 2011

Anil Kumar Shukla, **Sanjukta Patra** and **Vikash Kumar Dubey**
"Evaluation of selected antitumor agents as subversive substrate and potential inhibitor of trypanothione reductase: An alternative approach for chemotherapy of Leishmaniasis", *Molecular and Cellular Biochemistry*, DOI: 10.1007/s11010-011-0762-0, 2011

Nandini Sarkar, Manjeet Kumar and **Vikash Kumar Dubey**
"Exploring possibility of promiscuity of amyloid inhibitor: Studies on effect of selected compounds on folding and amyloid formation of proteins", *Process Biochemistry*, DOI: 10.1016/j.procbio.2011.02.010, 2011

Anil Kumar Shukla, **Sanjukta Patra** and **Vikash Kumar Dubey**
"Deciphering molecular mechanism underlying antileishmanial activity of *Nyctanthes arbortristis*, an Indian medicinal plant", *Journal of Ethnopharmacology*, DOI: 10.1016/j.jep.2011.01.044, 2011

Anil Kumar Shukla, **Sanjukta Patra** and **Vikash Kumar Dubey**
"Biophysical and folding parameters of trypanothione reductase from *Leishmania infantum*", *Applied Biochemistry and Biotechnology*, DOI: 10.1007/s12010-011-9229-8, 2011

Jihun Lee, Sachiko I. Blaber, **Vikash K. Dubey** and Michael Blaber
"A polypeptide 'building block' for the β -trefoil fold identified by top-down symmetric deconstruction", *Journal of Molecular Biology*, 407 (5), 744-763, 2011

Abhay Narain Singh and **Vikash Kumar Dubey**
"Exploring applications of procerain B, a novel protease from *Calotropis procera*, and characterisation by N-terminal sequencing as well as peptide mass figure printing", *Applied Biochemistry and Biotechnology*, DOI: 10.1007/s12010-011-9158-6, 2011

Urmila Saxena, Madhuri Das, Seraj Ahmed, Lepakshi Barbora, Mala Borthakur, **Anil Verma, Utpal Bora** and **Pranab Goswami**
"Multiwalled Carbon Nanotube-Based Enzyme Electrode for Total Cholesterol Estimation in Human Serum", *Journal of Experimental Nanoscience*, 6 (1), 84-95, 2011

Seema Patel and **Arun Goyal**
"Functional oligosaccharides: Production, properties and applications", *World Journal of Microbiology and Biotechnology*, DOI: 10.1007/s11274-010-0558-5, 2011

Saurabh Jyoti Sarma and **Kannan Pakshirajan**
"Surfactant aided biodegradation of pyrene using immobilised cells of *Mycobacterium frederiksbergense*", *International Biodeterioration and Biodegradation*, 65 (1), 73-77, January 2011

Kannan Pakshirajan, Auta Sivasankar and Naresh Kumar Sahoo
"Decolourisation of synthetic wastewater containing azo dyes by immobilised *Phanerochaete chrysosporium* in a continuously operated RBC reactor", *Applied Microbiology and Biotechnology*, 89 (4), 1223-1232, February 2011

Saurabh Jyoti Sarma, **Kannan Pakshirajan** and Biswanath Mahanty
"Chitosan coated alginate-polyvinyl alcohol beads for encapsulation of silicone oil containing pyrene: a novel method for biodegradation of polycyclic aromatic hydrocarbons", *Journal of Chemical Technology and Biotechnology*, 86 (2), 266-272, February 2011

Atreyi Ghosh, **Kannan Pakshirajan**, P. K. Ghosh and N. K. Sahoo
"Perchlorate degradation using an indigenous microbial consortium predominantly *Burkholderia* sp.", *Journal of Hazardous Materials*, 187 (1-3), 133-139, March 2011

Achlesh Daverey and **Kannan Pakshirajan**
"Pretreatment of synthetic dairy wastewater using the sophorolipid-producing yeast *Candida bombicola*", *Applied Biochemistry and Biotechnology*, 163 (6), 720-728, March 2011

Chemical Engineering

R. Anantharaj and **Tamal Banerjee**
"Quantum chemical studies on the simultaneous interaction of thiophene and pyridine with ionic liquid", *American Institute of Chemical Engineers*, 57 (3), 749-764, March 2011

Nirmal Ravi Varma, Anantharaj Ramalingam and **Tamal Banerjee**
"Experiments, correlations and COSMO-RS predictions for the extraction of benzothiophene from *n*-hexane using imidazolium-based ionic liquids", *Chemical Engineering Journal*, 166 (1), 30-39, January 2011

R. Anantharaj and **Tamal Banerjee**
"COSMO-RS based predictions for the desulphurisation of diesel oil using ionic liquids: Effect of cation and anion combination", *Fuel Processing Technology*, 92 (1), 39-52, January 2011

J. Anandkumar and **B. Mandal**

"Adsorption of chromium(VI) and Rhodamine B by surface modified tannery waste: Kinetic, mechanistic and thermodynamic studies", *Journal of Hazardous Materials*, 186, 1088-1096, 2011

Civil Engineering

N. K. Sahoo, K. Pakshirajan, **P. K. Ghosh** and A. Ghosh
"Biodegradation of 4-chlorophenol by *Arthrobacter chlorophenolicus* A6: Effect of culture conditions and degradation kinetics", *Biodegradation*, 22 (2), 275-286, 2011

Sharad Gokhale

"Traffic flow pattern and meteorology at two distinct urban traffic junctions with impacts on air quality", *Atmospheric Environment*, 45 (10), 1830-1840, 2011

Suresh Pandian, **Sharad Gokhale** and Alope Kumar Ghoshal
"An open-terrain line source model coupled with street-canyon effects to forecast carbon monoxide at traffic roundabout", *Science of the Total Environment*, 409 (6), 1145-1153, 2011

Humanities and Social Sciences

Bidisha Som

"Language, Categorisation and Cognitive Structures: The Case of Great Andamanese", *International Journal of Dravidian Linguistics*, XXXX (1), 175-190, 2011

Mathematics

Rajesh P. Singh, **A. Saikia** and **B. K. Sarma**
"Poly Dragon: An Efficient Multivariate Public Key Cryptosystem", *Journal of Mathematical Cryptology*, published online February 2011, ISSN (Online) 1862-2984, ISSN (Print) 1862-2976

Bhupen Deka and **Rajen K. Sinha**
" $L^\infty(L^2)$ and $L^\infty(H^1)$ – Norms Error Estimates in Finite Element Method for Linear Parabolic Interface Problems", *Numerical Functional Analysis and Optimisation*, 32 (3), 267-285, March 2011

Mechanical Engineering

M. Hazarika, S. Deb, **U. S. Dixit** and J. P. Davim
"Fuzzy set based setup planning system with ability for online learning", *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, 225 (2), 247-263, 2011

Centre for Nanotechnology

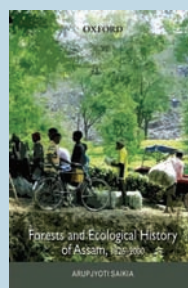
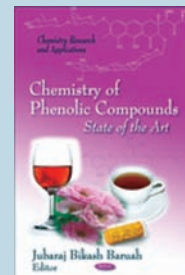
P. Sanpui, **A. Chattopadhyay**, **S. S. Ghosh**
"Induction of Apoptosis in Cancer Cells at Low Silver Nanoparticle Concentrations using Chitosan Nanocarrier, *ACS Applied Materials and Interfaces*, 3 (2), 218-228, 2011

Prasanta J. Goutam, Dilip K. Singh, **P. K. Giri**, **P. K. Iyer**
"Enhancing the Photo Stability of Poly-(3-Hexylthiophene) by Preparing Composites with Multiwalled Carbon Nanotubes", *Journal of Physical Chemistry*, DOI: 10.1021/jp109900m, January 2011

Book

Chemistry

J. B. Baruah (Editor)
Chemistry of Phenolic Compounds: State of the Art, Nova publisher, USA, January, 2011, 252 pp, ISBN: 9781617613357



Humanities and Social Sciences

Arupjyoti Saikia

Forests and Ecological History of Assam, 1826-2000, Oxford University Press, 2011, 392, ISBN: 9780198069539

Book Chapter

Biotechnology

Achlesh Daverey and **Kannan Pakshirajan**
'Recent advances in bioremediation of contaminated soil and water using microbial surfactants', *Microbes and Microbial Technology*, I. Ahmad (Ed), Springer, New York, 207-228, January 2011

Mechanical Engineering

U. S. Dixit

'Finite element modelling of rolling processes', *Finite Element Method in Manufacturing Processes*, Ed. by J. Paulo Davim, ISTE-Wiley, 137-172, 2011

Rajiv Tiwari

'Internet based virtualisation of laboratory experiments: A reality', *Educational Technology in Changing Society*, Ed. by Rajarshi Roy, Shipra Publications, Delhi, 177-193, 2011

Achievement/Award/Felicitation



Dr. Dubey, receiving the Young Scientist Award of National Academy of Agriculture Sciences (NAAS)

Dr. Vikash Kumar Dubey, Associate Professor, Department of Biotechnology, was awarded (1) the Young Scientist Award of National Academy of Agriculture Sciences in February 2011; (2) Indian Society of Chemists and Biologists (ISCB) Young Scientist Award (Biological Sciences) for Medical Biotechnology in February 2011; (3) Young Scientist Award of the Biotech Research Society of India.

Prof. Arun Goyal, Department of Biotechnology, was elected as Fellow of the National Academy of Biological Sciences (FNABS) in January 2011

Dr. Tamal Banerjee, Assistant Professor, Chemical Engineering, was awarded the INDO-US Fellowship 2011 in Engineering Sciences.

Prof. T. Punniyamurthy, Department of Chemistry, has received JSPS Bridge Fellowship 2010 and JSPS Short-Term Invitation Fellowship 2011 sponsored by Japan Society for the Promotion of Science.

IIT Guwahati received the second prize for the best MTech thesis in the area of VLSI and Microelectronics among twenty eight participating institutes across India. The thesis titled "Design of Multi-band CMOS Low Noise Amplifier" was submitted by B. C. Deepak, and guided by **Dr. Roy Paily**, Associate Professor, Department of Electronics and Electrical Engineering. The award consisted of cash award to the Institute as well as the student and the thesis supervisor. The award was funded by Department of Information Technology (DIT) India through an R&D project called Special Manpower Development Programme – Phase II (SMDP-II).

Change of Nomenclature

The name of the Department of Electronics and Communication Engineering has been changed to Electronics and Electrical Engineering.

New Faculty



Dr. Amit C. Awekar
Assistant Professor
Computer Science and
Engineering



Dr. Ashish Anand
Assistant Professor
Computer Science and
Engineering



Dr. Amit Sethi
Assistant Professor
Electronics and Electrical
Engineering



Dr. Pankaj Biswas
Assistant Professor
Mechanical Engineering



Dr. Ganesh Natarajan
Assistant Professor
Mechanical Engineering



Dr. Nitin Chaudhary
Assistant Professor
Biotechnology

PhD Completed During January– March 2011

Department/Centre	No. of PhDs
Biotechnology	2
Chemistry	2
Civil Engineering	2
Mechanical Engineering	2
Physics	1
Centre for Nanotechnology	2

Student Achievement

Dr. Siva Murru and Dr. Saitanya K. Bharadwaj of the Department of Chemistry have been selected for the first and second prize respectively of "2010 Eli Lilly and Company Asia Outstanding Thesis Awards" at the University of Hyderabad in January 2011. The award consists of USD 1500 for first prize and USD 1000 for the second prize and Lilly plaque. Dr. Siva Murru did his PhD dissertation with **Prof. B. K. Patel** and Dr. Saitanya K. Bharadwaj with **Prof. M. K. Chaudhuri** and **Dr. Gopal Das**.

Ms. Jashmini Deka, a PhD student, of the Department of Chemistry has received an international travel award for presenting a poster in the Symposium O (Bio-nanomaterials for Imaging, Sensing and Actuating) of the spring conference of the European Materials Research Society which will take place in Nice, France in May 2011. The award is co-sponsored by the University of Liverpool, UK and by the Company of Biologists.

Md. Hanif Choudhury, a PhD student, of the Centre for Energy has been selected for National Renewable Energy Fellowship 2010-2011, awarded by Ministry of New and Renewable Energy, Govt. of India.

New Branch of SBI



A new branch of the State Bank of India was inaugurated in the Institute campus on 30 March 2011 by Prof. Gautam Barua, the Director of the Institute in the presence of Shri R. K. Garg, Chief General Manager, SBI, NE Circle and Shri Praveen Gupta, General Manager, SBI, NE Circle. Earlier the State Bank of India offered their services in the campus through an extension counter of SBI, ICD Amingaon Branch.

International Women's Day



Delegates, resource persons and participants at the programme

On the occasion of the International Women's Day 2011, a short programme on Women Empowerment and Health was organised in the Seminar Hall of the Department of Humanities and Social Science on 8 March 2011. A panel discussion was held on topics related to empowerment of women, various cultural and social issues faced by Indian women, equality among the genders and health awareness among the working women, and was attended by scholars of the Institute.

Besides the panel discussion, art exhibition and poetry recitation programmes were organised and taken part in by the students. A short play was also organised by the students of the Department of Humanities and Social Sciences to portray the changing face of Indian women over time in Indian history. Another skit on women issues was enacted by the student members of the IIT Guwahati Drama Club. The wall magazine of the Department of Humanities and Social Sciences was also launched in the same function.

In the spirit of the programme, a free health check-up camp was organised for girl children of *Shishu-Gram*, an orphanage. To create awareness on health related issues among working women of the Institute, a health programme on 'Consultation and Advice with Gynaecologists' was organised at the Institute Hospital on 12 March which was well attended by faculty, staff and students of the Institute. The programme was organised by **Dr. Rakhi Chaturvedi**, Associate Professor, Department of Biotechnology and Convenor, Committee for Working Women, IIT Guwahati, in association with the Department of Humanities and Social Sciences.

Alcheringa 2011



Alcheringa, the annual cultural festival of IIT Guwahati, was held from 3-6 February this year. Alcheringa is now regarded as a much anticipated students' cultural event of the North-East where thousands of students across the country take part in various youth oriented competitions, workshops, seminars and informal events. The performances of musicians and performing artistes of repute are the real crowd puller.

Meaning 'dreamtime', Alcheringa has grown into a big cultural event attracting participation from over 150 colleges and a footfall in excess of thirty thousand. In the past Alcheringa has featured some exhilarating performances from some of the biggest names in the entertainment industry, namely Sonu Niigaam, Shaan, Strings, KK, Euphoria, Parikrama, The Raghu Dixit Project, Shankar Ehsaan Loy, the Swiss folk metal band Eluveitie, etc.

Alcheringa 2011 started on a classical note with virtuoso musicians Vinayak Chittar (sitar), Arnab Chakrabarty (sarod) and Aditya Kalyanpur (tabla) showcasing their instrumental

mastery, followed by a stunning performance by Advaita in the Institute Auditorium with their melodious fusion. February 4 culminated with RDB rocking the crowd with their popular hits. Kachche Lamhe, a play written by Gulzaar and directed by Salim Arif starring Harsh Chhaya, Kiran Karmakar and Lubna Salim was staged on 5 February besides Rock-O-Phonix finals and Motherjane. The final day ended with KK's performance, during which around 15000 people gathered to witness it, thus putting down curtains on one of the biggest college festivals of India.

Apart from the above, some of the notable pro-shows during the festival were Dance performance by Daksha Seth Dance Academy, including Bollywood actress Isha Sharvani; a street play by Stray Factory, a Chennai based network of actors, writers, artists and musicians; and a mime show by Moinul Haque, a famous mime artist of North-East India and a Senior Fellowship holder in the field of mime from the Department of Culture, Government of India.



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