FRIDAY 3 FEBRUARY 2012

Tutorials
Venue: E & ECE Department

9.00 -12.00
Tutorial 1
Wireless Communications: An Information Theoretic Perspective
Prof. Ajit K. Chaturvedi, IIT Kanpur

Tutorial 2
The Next Generation Broadband Wireless Communication Network 3GPP-LTE - (Advanced)
Prof. S.S. Das, IIT Kharagpur

Venue: E & ECE Department

14.00-17.00
Tutorial 3
Convergence in Networks using the NGN
Prof. Subrat Kar, IIT Delhi

Tutorial 4
Information Flow in Wireless Networks
Prof. Srikrishna Bhashyam, IIT Madras

18.30
NCC 2012 INAUGURATION
Venue: Gargi Auditorium
Chief Guest: Prof. A. Paulraj, Professor Emeritus, Stanford University, USA

SATURDAY 4 FEBRUARY 2012
### Plenary Talk

**On Scaling Wireless Capacity**

*Prof. A. Paulraj, Professor Emeritus, Stanford University, USA*

**Venue:** Vikramshila V-3 / Gargi Auditorium

**Venue:** Vikramshila Gargi Auditorium

### Cognitive Radio

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<th>Prof. B. Sundar Rajan, I.I.Sc., Bangalore</th>
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<td>A Cooperative Secondary User Localization Based Primary User Localization Method for Cognitive Radio Networks</td>
<td>Praful Deolal Mankar; Sant Pathak; R. V. Rajakumar</td>
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<td>A Normal Factor Graph Approach for Co-operative Spectrum Sensing in Cognitive Radio</td>
<td>Debasish Bera; Sant Pathak; Indrajit Chakrabarti</td>
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<td>Threshold Optimization of Finite Sample Based Cognitive Radio Network</td>
<td>Ajay Singh; Manav Bhatnagar; R. K. Mallik</td>
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<td>Optimal MTM Spectral Estimation Based Detection for Cognitive Radio in HDTV</td>
<td>Manjunath Kashyap Jataprolu; Ravinder D. Koilpillai; Srikrishna Bhashyam</td>
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### Image and Video Processing -1

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<td>Segmentation of Two Dimensional Electrophoresis Gel Image Using the Wavelet Transform and the Watershed Transform</td>
<td>Ratnesh Singh Sengar, Ashutosh Kumar Upadhyay, Manjit Singh, Vikram M. Gadre</td>
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<td>Real-Time Stereo Video Decoding and Rendering on Multi-Core Architecture</td>
<td>Chirag Pujara; Viswanath Veera; Amit Kumar; Naresh Reddy; Vidhu Tholath</td>
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<td>A High-Performance Architectural Design for Motion Estimation in MPEG-4</td>
<td>Nikhil Guahagarkar; Shaik Rafi Ahamed</td>
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<td>Timely Delivery of Video Data in Staircase Scheme</td>
<td>Satish Chand; Hari Om</td>
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Session Chair: **Prof. Shubhashish Choudhuri, IIT, Bombay**

**Venue**: Vikramshila V - 3

**10.10-11.25**

**Optical Communications and Networking**

- Decoy-pulse Protocol for Frequency-Coded Quantum Key Distribution  
  Sudeshna Bhattacharya; Pradeep Kumar  
  [1569506595](#)

- Group Velocity Dispersion and Nonlinearity Tolerance of Micro-ring Resonator Based Filter Demodulator for DQPSK Signal  
  Raunaq Agarwal; Shweta Mishra; Ranjan Gangopadhyay; Sumanta Gupta  
  [1569519549](#)

- Comparison of Semiclassical and Quantum Descriptions of Saturated Erbium Doped Fibre Amplifiers (EDFA)  
  Karthikeyan A Rajarathinam; Harishankar Ramachandran  
  [1569521617](#)

- XPM Induced Crosstalk in Dispersion Compensated Fiber Links for DPSK and OOK Modulation Format  
  Anamika; Vishnu Priye  
  [1569521683](#)

- Comprehensive Design Methodology for Control & Data Plane in Wavelength-Routed Optical Networks  
  Gitanjali Chandwani Manocha; Debasish Datta  
  [1569526953](#)

Session Chair: **Prof. Subrat Kar, IIT, Delhi**

**Venue**: Vikramshila V - 4

**10.10-11.25**

**Wireless Access -1**

- A Dirty Paper Coding Scheme for the Multiple Input Multiple Output Broadcast Channel  
  Balakrishna Saradka; Srikrishna Bhashyam; Andrew Thangaraj  
  [1569521447](#)

- Fair Rate Allocation, Routing, and Stream Control Scheduling in MIMO-Based WMNs  
  Matadeen Bansal; Aditya Trivedi  
  [1569521509](#)

- On the Data Performance in Tactical WLAN with Signal Strength Ratio Based Handoff Algorithms  
  Sanjay Dhar Roy; Anup Sadhukhan  
  [1569518463](#)

- Power and Delay Optimal Policies for Wireless Systems  
  Satya Kumar V; Anusha Lalitha; Vinod Sharma  
  [1569521579](#)
11.25-11.45  
Tea Break

Sa2.WCC  
**Venue:** Vikramshila Gargi Auditorium

11.45-13.30

**Wireless Cooperative Communication**

**Invited Talk - 1:**
Physical Layer Network-Coding for Bidirectional Wireless Relaying and Latin Squares  
*Prof. B. Sundar Rajan, Department of ECE, IISc, Bangalore*

- Optimal Relay Placement for Coverage Extension in LTE-A Cellular Systems  
  *Suman Khakurel; Mahima Mehta; Abhay Karandikar*

- On the Relay Gain of the Fading Relay Channel with Finite Input Constellations  
  *Vijayvaradharaj Muralidharan; B. Sundar Rajan*

- Beamforming and Combining Based on Estimated Channels in Cooperative Relay Networks  
  *Arti Mk; R. K. Mallik; Robert Schober*

- Full CSI Selection Combining for Multi-Relay Cooperative Diversity Systems  
  *M.D. Selvaraj; Ranjan K. Mallik*

- On the Achievable Rate of AWGN Relay Channel with Finite Input Constellations  
  *Nirmal Shende; B. Sundar Rajan*  
  **11.45-13.30**

**Session Chair:** *Prof. Adrish Banerjee, IIT, Kanpur*

Sa2.IVP2  
**Venue:** Vikramshila Maitrayee Auditorium

11.45-13.30

**Image and Video Processing -2**

**Invited Talk - 2:**
How to Touch an Object Defined by a Point Cloud  
*Prof. Subhashish Choudhuri, EE, IIT Bombay*

- Low Complexity Bi-Directional Image Quality Assessment for Digital Image Stabilization  
  *Sangwoo Ahn; Lin-bo Luo; Jong-Park Kim; Jong-Wha Chong*

**156952025**
Segmentation of Camera-Trap Tiger Images Based on Texture and Color Features
Pavan Reddy; R Aravind

A Novel Method for Vessel Detection Using Contourlet Transform
Farnoosh Ghadiri; Seyed Mohsen Zabihi; Hamid Reza Pourreza; Touka Banaee

Universal Syllable Tokeniser for Language Identification
Subhadeep Dey; Hema Murthy

Session Chair: Prof. V.M. Gadre, IIT Bombay
Venue: Vikramshila V - 3

Codings - 1
11.45-13.30

- Four-Phase Orthogonal Code Design for MIMO Radar Systems
  G.V.K. Sharma, K. Raja Rajeswari

- Additional Check Node to Improve the Performance of LDPC Codes in the Error Floor Region
  Kuntal Deka; Alentattil Rajesh; Prabin Bora

- Regenerating Codes: a Reformulated Storage-Bandwidth Trade-off and a New Construction
  Govinda M Kamath; P Vijay Kumar

- A High Coding Gain and Low Decoding Complexity STBC for Four Transmit Antennas
  Nidhi Sharma; Manav Bhatnagar; Monika Agrawal

Session Chair: Prof. S.L. Maskara
Venue: Vikramshila V - 4

Wireless Access - 2
11.45-13.30

Invited Talk - 3:

- To be announced (from BroadCom)

- A Waiting-time Based Backoff Algorithm in the IEEE 802.11 Based Wireless Network
  T. Alekhya; B. Mounika; E. Jyothi; B.N. Bhandari

- Delay Optimal Scheduling of a Discrete Time Batch Service Queue for Point-To-Point Channel Code Rate Selection
  Vineeth Bala Sukumaran; Utpal Mukherji
Joint Routing, Scheduling and Power Control for Multihop MIMO Networks
Harish Vangala; Rahul Meshram; Vinod Sharma

VCG Auction Based Optimal Allocation for Scalable Video Communication in 4G WiMAX
Shreyans Parakh; Aditya Jagannatham

Session Chair: Prof. V. Sinha, LNMIT, Jaipur
13.30-14.30 Lunch Break

Sa3.NP1
Venue: Vikramshila Gargi Auditorium
14.30-16.15 Network Performance - 1

Invited Talk - 4:
Cloud Computing
Vinay Dua, Cisco India Ltd.

Public-Private Separation in Linear Network-Coded Simultaneous Multicast and Unicast
Amaranath Alapati; Avinash Krishnakumar; Andrew Thangaraj

An Investigation Into Traffic Analysis for Diverse Data Applications on Smartphone
Sudhir Kumar Baghel; Kirti Keshav; Venkateswara Manepalli

Analysis and Performance Comparison of Uniform and Mixed Service Policy for Vacation Queue
Dibyajyoti Guha, S.S. Pathak

Performance Analysis and Redundancy Implementation of Open Source Embedded Router
Vaibhav Gupta; Mohit Vajpeyee; Subrat Kar; T. Raga Naresh Kumar

A Novel Crosslayer-aware Transmission Queue Adaptation System Using Multiple Physical Links
Soma Bandyopadhyay; Shameemraj Nadaf

Session Chair: Prof. D. Datta, IIT, Kharagpur

Sa3.IVP2
Venue: Vikramshila Maitrayee Auditorium
14.30-16.15 Image and Video Processing - 3
Invited Talk - 5:
Wavelets and filter banks - Challenges as I see them and our Endeavours
Prof. V. M. Gadre, EE, IIT Bombay

- High Throughput Pipelined Architecture for Fast 2-D 4x4 Forward Integer Transform of H.264
  Rohan Mukherjee; W Prasad; P Dheeraj; Indrajit Chakrabarti; Somnath Sengupta

- Combined Online and Offline Assamese Handwritten Numeral Recognizer
  Siva reddy G; Puspanjali Sharma; S. R. Mahadeva Prasanna; Chitrakekha Mahanta; L N Sharma

- On the Performance of IP and Mobile Based Automatic Speaker Verification
  Nibedita Nandan; Goutam Saha

- Outlier Removal and Fusion Techniques for Robust Speaker Recognition Applications
  Israj Ali, Goutam Saha

Session Chair: Prof. P.K. Biswas, IIT, Kharagpur
Venue: Vikramshila V - 3
14.30-16.15 Wireless Transmission -1

Invited Talk - 6:
Antennas for Wireless Communication: A Big Revolution in 125 years
Prof. Debashis Guha, Inst of Radio Physics and Electronics, University of Calcutta

- Achievable Rate Region of Gaussian Broadcast Channel withFinite Input Alphabet and Quantized Output
  Suresh Chandrasekaran; Saif Khan Mohammed; A. Chockalingam

- Capacity Improvement for Finite-Input Constellation Using Unitary Precoding for Two User Channels
  Hari Ram; Arun Ayyar; K Giridhar

- Underwater Acoustic Communications: Design Considerations At the Physical Layer Based on Field Trials
  Sameer Babu, T.P, R. David Koilpillai, P. Muralikrishna

1569518247
1569519867
1569502211
1569518541
1569521019
1569521519
1569521879
1569521879
Performance Analysis of MRC Receiver with Channel Estimation Error and CCI in Nakagami-m Fading Channels

G Aruna; Pravas Ranjan Sahu

Session Chair: Prof. Ajit K. Chaturvedi, IIT, Kanpur
Venue: Vikramshila V - 4
14.30-16.15 Wireless Sensor and Ad-hoc Networks -1

Invited Talk - 7:
Sensor Webs: Application Architecture and Development Platforms
Mr. Prateep Misra, Tata Consultancy Services

Multi-Sensor Spatio-Temporal Vector Prediction History Tree (V-PHT) Model for Error Correction in Wireless Sensor Networks
Aman Jaiswal; Aditya Jagannatham

Testbed Based Throughput Analysis in a Wireless Sensor Network
A. Anand Kumar; P. Gireesan Namboothiri; Sarang Deshpande; Sreejith Vidhyadharan; Krishna M. Sivalingam; S.A.V. Satya Murty

Rajiv Tripathi, Yatindra Nath Singh, Nishchal K. Verma,

Majority Logic Fusion of Censored Decisions in Wireless Sensor Networks with Rayleigh Fading
Chinmoy Kundu; Sumit Kundu; Gianluigi Ferrari; Riccardo Raheli

Session Chair: Prof. Abhay Karandikar, IIT, Bombay
16.15-16.30 Tea Break

Venue: Vikramshila Gargi Auditorium

16.30-17.45 Wireless Transmission 2

Joint Estimation of Synchronization Impairments in MIMO-OFDM System
Renu Jose; K.V.S. Hari

Low-Complexity Near-Optimal Signal Detection in Underdetermined Large-MIMO Systems
Tanumay Datta; Nagaraja Srinidhi; A. Chockalingam; B. Sundar Rajan
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<th>Prof. Neelesh Mehta, I.I.Sc., Bangalore</th>
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- Channel Estimation At the Transmitter in a Reciprocal MIMO Spatial Multiplexing System  
  *Bharath Bettagere Nagaraja; Chandra R. Murthy*

- Closed Form BER Expressions for BPSK OFDM Systems with Fractional Timing Offset and Carrier Frequency Offset  
  *Uma Mahesh; Ajit K. Chaturvedi*

- A Conjugate Direction Search Algorithm for ML Estimation of Frequency Offsets in OFDMA Uplink  
  *Rajyavardhan Reddy P.; Thafasal Ijyas; S. M. Sameer*

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- Subword Based Approach for Grapheme-To-Phoneme Conversion in Bengali Text-To-Speech Synthesis System  
  *Krishnendu Ghosh, K. Sreenivasa Rao*

- Segmentation of TV Broadcast News Using Speaker Specific Information  
  *Sreenivasa Rao; Ketan N.Pachpande; Ramu Reddy Vempada; Sudhamay Maity*

- Assessing Vowel Quality for Singing Evaluation  
  *Mayank Vibhuti Jha; Preeti Rao*

- Faster BIC Segmentation Using Local Speaker Modeling  
  *Ruchir Travadi; Goutam Saha*

| | | |
Almost Exact Threshold Calculations for Covariance Absolute Value Detection
Vidyadhar Upadhya; Devendra Jalihal
1569521055

Compressed Acquisition of Correlated Signals
Jeedigunta Satyanarayana; Ramakrishnan G.A.
1569503785

Session Chair: Prof. V.U. Reddy, C. R. Rao Advanced Institute of Mathematics, Statistics and Computer Science, University of Hyderabad Campus, Hyderabad

Venue: Vikramshila V - 4

16.30-17.45 Wireless Sensor and Ad-hoc Networks - 2

Optimal Deployment of Impromptu Wireless Sensor Networks
Prasenjit Mondal; Kolar Purushothama Naveen; Anurag Kumar
1569512671

6PANview: Application Performance Conscious Network Monitoring for 6LoWPAN Based WSNs
Abhay Rao Bhadriraju; Sutasom Bhaumik; Lohith Y.S.; Brinda M.C.; Anand S.V.R; Malati Hegde
1569521553

On the Underwater Wireless Network Clustering
Priyatosh Mandal; Swades De
1569522353

A Mobility Factor Based Path Selection Scheme for Mobile Ad-hoc Networks
Sajal Sarkar, Raja Datta
1569509659

Session Chair: Prof. T.S. Lamba, Jaypee University, Solan, HP

SUNDAY 5 FEBRUARY 2012

9.00-10.00 Plenary Talk

Introduction to Cryptology including Visual Cryptography
Prof. Bimal Roy, Director, Indian Statistical Institute, Calcutta

Venue: Vikramshila V-3 / Gargi Auditorium

Su1.WT3 Venue: Vikramshila Gargi Auditorium

10.10-11.25 Wireless Transmission - 3

Invited Talk - 8:
Synthesis of Waveforms from Zero-Lag Cross-Correlation Matrix Under Practical Constraints

Prof. V. U. Reddy

C. R. Rao Advanced Institute of Mathematics, Statistics and Computer Science, University of Hyderabad Campus, Hyderabad

- Digital Video Broadcast Services to Handheld Devices and A Simplified DVB-H Receiver Subsystem
  Manas Kumar Hati, Tarun K. Bhattacharyya

- Amplitude Normalization in Blind Modulation Classification
  Gaurav Phukan; Prabin Bora; Alentattil Rajesh; Ramesh Chaveli

- Performance of Pulse Shape Modulation of UWB Signals Using Composite Hermite Pulses
  S. Mishra, A. Rajesh and P. K. Bora

Session Chair: Prof. K.V.S. Hari, I.I.Sc., Bangalore

Venue: Vikramshila Maitrayee Auditorium

10.10-11.25

Speech Processing - 2

- IITKGP-MLILSC Speech Database for Language Identification
  Sudhamay Maity; Anil Vuppala; Sreenivasa Rao; Dipanjan Nandi

- Architecture of a Teleconference System Based on Minimum Audible Angle
  Harikrishnan Potty; Rajbabu Velmurugan; Preeti Rao

- Speaker Verification Using Sparse Representation Over KSVD Learned Dictionary
  Haris B C; Rohit Sinha

- Pronunciation Variation Across Different Dialects for English: A syllable-Centric Approach
  Rajan Golda Brunet; Hema A Murthy

Session Chair: Prof. K.S. Rao, IIT, Kharagpur

Su1.AP

Venue: Vikramshila V - 3

10.10-11.25

Antenna and Propagation
A New Land Mobile Satellite Channel Model with Nakagami-q Distribution
Sayantan Hazra; Abhijit Mitra

Strip Lined - Truncated Ground Plane for Flat Response of Miniaturized UWB Patch Antenna
Robin Raju; Chandan Asokan

Comparative Study of a CRLH TL Based Zeroth Order Resonant Antenna
Sheeja K. L; Prasanna Kumar Sahu; Santanu Kumar Behera

Analysis of Shorted Plate Folded Feed L-slot Cut Microstrip Antenna
Amit Deshmukh; Sumit Ranka; Foram Shah; Mitali Parekh; Kamala Prasan Ray

Session Chair: Prof. Debatosh Guha, Inst. of Radio Phy. & Electronics, Uni. of Calcutta
Venue: Vikramshila V - 4

10.10-11.25
Green Telecommunication

Rural Base Station Powering
Sriram Narayanamurthy; Sneharaj Ramdaspilli; Ashok Jhunjhunwala; Bhaskar Ramamurthi

Optimal Power Allocation for a Renewable Energy Source
Abhinav Sinha; Prasanna Chaporkar

Quantifying the Improvement in Energy Savings for LTE eNodeB Baseband Subsystem with Technology Scaling and Multi-Core Architectures
Boyapati Hari Krishna; R. V. Rajakumar; Saswat Chakrabarti

Energy Saving in OFDMA Cellular Systems Using Base-Station Sleep Mode: 3GPP-LTE a Case Study
Priyangshu Ghosh; Suvra Sekhar Das; Swetha Naravaram; Prabhu Chandhar

GREEN-IT: An Approach to Energy Savings Using Energy Aware Network Management System
Santosh Chaudhari; Subhash Nottath; Mani Subramanian; Hema Murthy

Session Chair: Prof. Srikrishna Bhashyam, IIT, Madras
Tea Break

11.45-13.00
Poster Session
P1  Iterative Random Beamforming for MIMO-OFDM Systems
    *Neeraj Shrivastava; Aditya Trivedi*

P2  Detection and Selective Destruction of Bacteria Colony At THz Frequencies
    *Faruk Ali; Sudhabindu Ray*

P3  Cooperative Spectrum Sensing with Censoring of Cognitive Radios in Rayleigh Fading Channel
    *Srinivas Nallagonda; Sanjay Dhar Roy; Sumit Kundu*

P4  Diversity Order VS. Rate in an AWGN Channel
    *Anusha Gorantla; Vinod Sharma*

P5  Energy Efficient Scheduling in 4G Smart Phones for Mobile Hotspot Application
    *Kirti Keshav; Venkata Indukuri; Venkataram Pallapa*

P6  Quantized Modulation Diversity for 64-QAM
    *Anilkumar C.D.; Sant Pathak*

P7  Implementing Fast and Simple FEC for Ultra High Frequency Radio
    *Ankita Pramanik; Rekha Ashok Baradol*

P8  Energy Level Performances of Data Services in Random WSN with Rayleigh Fading
    *Arnab Nandi; Sumit Kundu*

P9  An Energy Efficient WSN with Cooperative Relaying Technique
    *Musthyala Harish; Srikanth Bhavana; Ratnajit Bhattacharjee*

P10 VoIP Scheduling and Radio Resource Usage Estimation - Effect on Best Effort Capacity
    *Priyangshu Ghosh; Sauva Sekhar Das; Prabhu Chandhar*

P11 RAID Technology for Secured Grid Computing Environments
    *Nallabelli Sandeep Chaitanya*

P12 Energy Cost Analysis of Data Plane and Control Plane for 3GPP-LTE
    *Pankaj Gupta; R. V. Rajakumar; C.S Kumar*

P13 Validation of a DiffServ Based QoS Model Implementation for Real-Time Traffic in a Test Bed
    *Sruti Gan Chaudhuri; Cheruu Kumar; Ratnam V RajaKumar*
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<td>Noise-induced Contrast Enhancement of Dark Images Using Non-dynamic Stochastic Resonance</td>
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<td>Real-Time Enhancement of Electrolaryngeal Speech by Spectral Subtraction</td>
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<td>Estimation of Lip Opening for Scaling of Vocal Tract Area Function for Speech Training Aids</td>
<td>Nagesh Nayak; Rajbabu Velmurugan; P. C. Pandey</td>
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<td>Neural Activity Profile for Short Time Memory Task</td>
<td>Jacob Mathew; Laxmi Kanta Sahoo; Goutam Saha</td>
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<td>Effective Estimation of Target Bits for Rate Control in Video Coding</td>
<td>Imankalyan Mukherjee; Anant Malewar; Vikram M. Gadre</td>
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<td>A Transform Domain LMS Audio Coder</td>
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<td>Characterization of Infant Cries Using Spectral and Prosodic Features</td>
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<td>Amit Deshmukh; Priyanka Baxi; Charmi Kamdar; Bhagyesh Vora; Kamala Prasan Ray</td>
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<td>Designing a Patch System to Interface Between HF and VHF Radios</td>
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<td>Analysis of Modified Microstripline and Its Application</td>
<td>Durairaj Packiaraj; Kj Vinoy; Ramesh M; Ajit T Kalghatgi</td>
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<td>P33</td>
<td>Throughput Analysis for Dynamic Spectrum Allocation in Cognitive Radio Networks</td>
<td>Prabhjot kaur, Moin Uddin and Arun Khosla</td>
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**12.45-14.00**

**Lunch Break**

**Su2.NP2**

**Venue:** Vikramshila Gargi Auditorium

**Network Performance - 2**

- On the Departure Process of Jitter Buffer in TDMoIP
  - S. Usha Rani, R. Manivasakan
  - Paper ID: 1569521719

- A Context Aware Collaborative Service Provisioning System for Mobile-Commerce
  - Subramanyam M; Venkataram Pallapa
  - Paper ID: 1569517083

- A Method of Developing an Agent Based Ubiquitous Node Monitoring Protocol
  - Sarada Gochhayat; Venkataram Pallapa
  - Paper ID: 1569505111

- Implementation of DSP Lab on a Cloud
  - Vaidyula Sarath Chandra; Anup Kulkarni; Prahlad Kishore; Kavitha Gopal;
  - Paper ID: 1569521831

- Port-based Traffic Verification as a Paradigm for Anomaly Detection
  - Vadiraj Panchamukhi; Hema Murthy
  - Paper ID: 1569521365
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<td>1569504929</td>
<td>On Concentric Permutation Code Based Vector Quantizer Design</td>
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<td>Mohit Sharma; Alentattil Rajesh; Prabin Bora</td>
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<td>1569517973</td>
<td>Adaptive Selection of Search Space in Look Ahead Orthogonal Matching Pursuit</td>
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<td>Sooraj Ambat; Saikat Chatterjee; K.V.S. Hari</td>
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<td>1569520751</td>
<td>Burst Error Correction Using Partial Fourier Matrices and Block Sparse Representation</td>
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<td>N Mukund Sriram; B. S. Adiga; K.V.S. Hari</td>
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<td><strong>Prof. Ranjan K. Mallik, IIT, Delhi</strong></td>
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<td>1569504761</td>
<td>Resistive Feedback LNA for Radio Ultra-Wideband Receivers</td>
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<td>1569508927</td>
<td>Resistive Feedback LNA with Dual Band Notch Filter for Suppression of WLAN Signals in UWB Receivers</td>
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<td>Mostafa Yargholi, Asieh Parhizkar Tarighat</td>
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<td>1569512079</td>
<td>Optimization of Phase Noise in a PLL Circuit Design</td>
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<td>Nupur Sood; Pinaki Sen</td>
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<td>1569521567</td>
<td>SAR Analysis Using DICOM Based Voxel Model</td>
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<td>1569521679</td>
<td>Design, Analysis and Fabrication of Rectenna for Wireless Power Transmission - Virtual Battery</td>
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<td><strong>Prof. Ratnajit Bhattacharya, IIT, Guwahati</strong></td>
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<td>Localization Using Stochastic Proximity Embedding for Underwater Acoustic Sensor Networks</td>
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<td>Ameer PM; Lillykutty Jacob</td>
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<td>Optimized Power Saving Mechanism for Wireless Ad Hoc Networks</td>
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<td>Reliable Data Transmission in Sensor Networks Using Compressive Sensing and Real Expander Codes</td>
<td>Swanand Kadhe; Sandhya Sree Thaskani; Girish Chandra; B. S. Adiga</td>
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<td>Queue Stability Measurements for Energy Harvesting Sensor Nodes</td>
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<td>On t-Designs and Bounds Relating Query Complexity to Error Resilience in Locally Correctable Codes</td>
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<td>Projection-Based Atom Selection in Orthogonal Matching Pursuit for Compressive Sensing</td>
<td>Saikat Chatterjee; K.V.S. Hari; Peter Händel; Mikael Skoglund</td>
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<td>Model-independent Approach for Chirp Parameter Estimation Employing</td>
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<td>An Efficient FPGA Implementation of GMSK (BT=0.3) Transceiver with Non Coherent Sequence Detection for Tactical V/UHF Waveforms</td>
<td>Subhashini Gupta, Vikas Bhattia, LC Mangal</td>
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<td>Biosignal Based On-road Stress Monitoring for Automotive Drivers</td>
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<td>Ultrasonic Spectacles and Waist-belt for Visually Impaired and Blind Person</td>
<td>Shripad Bhatlawande; Jayanta Mukhopadhyay; Manjunatha Mahadevappa</td>
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<td>Jamming to Foil an Eavesdropper</td>
<td>Navin Kashyap; Yogesh Sankarasubramaniam; Andrew Thangaraj</td>
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**Speech Processing - 3**

- Sub-band Envelope Approach to Obtain Instants of Significant Excitation in Speech
  - Vikram Lakkavalli; Venkata Vijay Girish K; Ramakrishnan G A
- Dynamic Stochastic Resonance-based Improved Watermark Extraction From Audio Signal
  - Onkar Krishna; Rajib Kumar Jha; Prabir Kumar Biswas; Milind Mushrif
- Modeling the Intensity of Syllables Using Classification and Regression Trees
  - Ramu Reddy Vempada; Sreenivasa Rao
- Automated CVR Modification for Improving Perception of Stop Consonants
  - A. R. Jayan; P. C. Pandey

**Session Chair:** Prof. K.S. Rao, IIT, Kharagpur

ID: 1569504517, 1569505031, 1569512215, 1569512651
Summary of the Invited Talks

Plenary Talks :

A. Title : **On Scaling Wireless Capacity**

Speaker : Prof. A. Paulraj, Emeritus Professor, Stanford University

Abstract : The need for massive scaling of wireless capacity (BPS/Sq. Km.) in mobile networks is obvious. The levers for scaling include adding bandwidth, cell splitting, multiple antennas, coding-decoding, relays, cooperation, interference management, scheduling and spectrum management, etc. This talk will pick on some of these areas and discuss their potential for scaling capacity and discuss their implementation hurdles.

B. Title : **Introduction to Cryptology including Visual Cryptography**

Speaker : Prof. Bimal Roy, Director, Indian Statistical Institute, Calcutta

Abstract : Basic concepts of Cryptology will be presented with illustrations. The notion of cryptographic security will be introduced. A particular cryptographic scheme: Visual Cryptography will be dealt in details. In this scheme, a secret is treated as an image and is shared among a set of participants (where each share is also an image) in such a way that a set of predefined "qualified" participants can recover the secret by superimposing their shares while other group of participants that are not pre-designated can not recover the secret.

Invited Talks :

A. Title : **Wavelets and filter banks - Challenges as I see them and our Endeavours**

Speaker : Prof. V. M. Gadre, Department of Electrical Engg., IIT, Bombay
Abstract: The speaker and his students have been working on the theme of wavelets, time-frequency methods and filter banks for over a decade to date. The subject offers many challenges and opportunities and evokes many reactions of varied nature from the Signal Processing/ Image Processing Community. In this talk, it is intended to present what the speaker sees as challenges and opportunities in the field based on his work. It is also proposed to present, briefly, two or three of the research and developmental endeavours pertaining to wavelets, filter banks and time frequency methods, with which the speaker has been involved closely in the last few years and to give a feel for the experiences in these endeavours.

B. Title : Physical Layer Network-Coding for Bidirectional Wireless Relaying and Latin Squares

Speaker : Prof. B. Sundar Rajan, I.I.Sc., Bangalore

Abstract : The design of modulation schemes for the physical layer network-coded two way relaying scenario is discussed with a protocol which employs two phases: Multiple access (MA) phase and Broadcast (BC) phase. It was observed by Koike-Akino et al., that adaptively changing the network coding map used at the relay according to the channel conditions greatly reduces the impact of multiple access interference which occurs at the relay during the MA phase and all these network coding maps should satisfy a requirement called the exclusive law. We show that every network coding map that satisfies the exclusive law is representable by a Latin Square and conversely, and this relationship can be used to get the network coding maps satisfying the exclusive law. The channel fade states for which the minimum distance of the effective constellation seen at the relay become zero are referred to as the singular fade states. For $M$-PSK modulation, it is shown that there are $\left(\frac{M^2}{4} - \frac{M}{2} + 1\right)M$ singular fade states which are responsible for deep fades during the MA phase and the constraints which the network coding maps avoiding the neighbourhood of these singular fade states should satisfy can be viewed equivalently as Partially Filled Latin Squares (PFLS). The problem of finding all the required maps is reduced to finding a small set of maps for $M$-PSK constellations ($M$ any power of 2), obtained by the completion of PFLS. Even though, the completability of $M \times M$ PFLS using $M$ symbols is an open problem, two specific cases where such a completion is always possible are identified and explicit construction procedures are provided. Having obtained the network coding maps, the set of all possible channel realizations (the complex plane) is quantized into a finite number of regions, with a specific network coding map giving the best performance in a particular region. It is shown that the complex plane can be partitioned into two regions: a region in which any network coding map which satisfies the exclusive law gives the same best performance and a region in which the choice of the network coding map affects the performance. The quantization thus obtained analytically, leads to the same as the one obtained using computer search for 4-PSK signal set by Koike-Akino et al., when specialized for $M=4.$ Simulation results show that the proposed scheme performs better than the conventional exclusive-or (XOR) network coding and in some cases outperforms the scheme proposed by Koike-Akino et al.
C. Title: Antennas for Wireless Communication: A Big Revolution in 125 Years

Speaker: Prof. Debatosh Guha, Institute of Radio Physics and Electronics, University of Calcutta

Abstract: Which came earlier: ‘Antenna’? or ‘Communication’? Answer is simple: they’ve always been together since the day of its inception. This article will discuss the geometry and uses of antennas since the time of Hertz’s experiments (1886). The term ‘wireless’, coined in the last decade of 19th century, has taken a different flavour and concept just within 125 years of time. Our fascinating ‘world’ is getting smaller and smaller. Wireless Communication also demands for ‘zero’ size equipment in the beginning of the 21st century. Printed circuit antenna has been failing to meet the critical demand. ‘Antenna on chip’ is another challenging aspect of today’s technology. This indeed calls for new antenna technology. This paper aims to address all these modern aspects and state of the art developments, which have taken place in the last decade.

D. Title: How to touch an object defined by a point cloud

Speaker: Prof. Shubhashish Choudhuri, Department of Electrical Engg., IIT, Bombay

Abstract: The task of touching a virtual object is quite different from that of visual rendering as one must provide an appropriate force feedback to the user. If one does have a description of the an object through a polygonal mesh, stable algorithms exist to render the object for haptic interaction. Can we interact with an object defined by a point cloud directly, without creating a mesh representation? In this talk, we shall explore methods to achieve that.

E. Title: Synthesis of Waveforms from Zero-Lag Cross-Correlation Matrix Under Practical Constraints

Speaker: Prof. V. U. Reddy, C. R. Rao Advanced Institute of Mathematics, Statistics and Computer Science, University of Hyderabad Campus, Hyderabad
Abstract: Synthesis of waveforms from zero-lag cross-correlation matrix subject to some practical constraints arise in several applications, for example, MIMO radar with waveform diversity. Recently, Jian Li et al. ("MIMO Radar Waveform Synthesis," in IEEE Radar Conference 2008, (RADAR’08), Rome.) formulated the synthesis problem as a multistep optimization. Development of a MATLAB code for implementing this optimization is non-trivial. In this talk, we present in some detail the steps of the optimization, the iterative algorithm that implements the optimization and the results of the code with some examples.

F. Title: Cloud Computing

Speaker: Mr. Vinay Dua, Cisco India Ltd.

G. Title: Sensor Webs: Application Architecture and Development Platforms

Speaker: Mr. Prateep Misra, Tata Consultancy Services

H. Title: Sponsor’s Speech from Broadcom

Speaker: To be announced