

## Report on the Distinguished Lecture Tours (DLTs)

Report on Distinguished Lecture Tours (DLTs)  
(Reported by IEEE Asia Pacific Regional Headquarters - as at 10 November 2011)

This year, the IEEE Communications Society has approved 5 Distinguished Lecture Tours for the Asia Pacific Region, namely: Dr. Weihua Zhuang for China, Dr. George Rouskas for Sri Lanka, Prof. Qian Zhang for Australia, Prof. Marco Chiani for India and Prof. Victor Leung for Malaysia and Singapore.

### 2011 AP DLT #1: 12 - 29 October 2011

Lecturer: Weihua Zhuang

Hosting Chapter	2011 Chapter Chairs
Beijing ComSoc Chapter	Chenyang Yang
Xian ComSoc Chapter	Jiandong Li
Shanghai ComSoc Chapter	Xinwan Li
Nanjing ComSoc Chapter	Guangguo Bi



The technical presentations will be delivered at the following locations:-

1. **Beijing - 17<sup>th</sup> October 2011 (Monday)**  
Topic: "Cooperative Wireless Networking"
2. **Xian - 19<sup>th</sup> October 2011 (Wednesday)**  
Topic: "Cooperative Wireless Networking" OR "Cross-Layer Design for Vehicular Ad Hoc Networks"
3. **Shanghai - 24<sup>th</sup> October 2011 (Monday)**  
Topic: "Cooperative Wireless Networking" OR "Cross-Layer Design for Vehicular Ad Hoc Networks"
4. **Nanjing - 25<sup>th</sup> October 2011 (Tuesday)**  
Topic: "Cooperative Wireless Networking"

## **Summary Report from Dr. Weihua Zhuang**

*I have been an IEEE ComSoc Distinguished Lecturer since January 2008, and in this capacity I have delivered quite a few Distinguished Lectures on research in wireless communications and networking in several countries. Before my tenure ends by the end of 2011, I wanted to have a Distinguished Lecture Tour (DTL). I chose to have it in China, because of the unprecedented interests in research from faculty members and students, and emphasis on research from government agencies.*

*My tour started from the Beijing Chapter. On Monday, October 17, I visited the Beihang University and received warm welcome from Professor Chenyang Yang. I gave a lecture on cooperative wireless networking, from a cross-layer design perspective between the physical and link layers. There were about 50 attendees, some faculty members, a few industry people, and many graduate and undergraduate students, from Beihang and other nearby universities. The audience showed a great interest in the topic, and I enjoyed the interaction in the Q&A period after the presentation. In particular, I received emails from some students before the seminar on reading research papers to build up sufficient background in order to follow the presentation. After the lecture, I also received several emails from graduate students asking detail technical questions on the presentation slides and on the related paper recently published in IEEE Transactions on Wireless Communications.*

*My second stop is the Xi'an Chapter. I arrived at the Xiang-Yang airport in the late afternoon on Tuesday, October 18. I had been in this ancient city several times before. The host, Professors RongSun and Kai Fan took me for a traditional local food for dinner, which brought back many good memories of the city. I was especially impressed by the recently built North Square of the Giant Wild Goose Pagoda, with the spectacular musical fountain and large-scale sculptures. On October 19 morning, hosted by Professor Bing Song, I delivered two lectures in a large lecture hall at the Xidian University, one on challenges and opportunities of vehicular ad hoc networks, and the other on cooperative wireless networking. There were about 150 attendees, mostly faculty members and students from several universities in the city. The engagement from the audience on the technical issues was impressive. We had to stop the discussion due to time limit.*

*I delivered my third lecture at the Shanghai Chapter on Monday, October 24. The meeting room at the Shanghai Jiao Tong University was crowded with several late comers standing near the door. Professor Xinbing Wang hosted the lecture, and there were about 50 people, mostly faculty members and students in the university. It was clear that my lecture on vehicular ad hoc networks was well received. There were many interesting questions, especial from some researchers who have been carrying out research in the area.*

*The high speed train from Shanghai to Nanjing took only about 75 minutes. I arrived at my last stop of the tour – Nanjing on October 24 afternoon. I received warm welcome from the host, Professors Guangguo Bi and Yueming Cai, and Drs. Weiwei Yang and Shi Jin. In the evening, they took me to the Confucius Temple, visited the Jiangnan Examination School in Ming Dynasty, and sampled various local famous dishes in a beautiful restaurant with live ancient Chinese music and magnificent view of the Qin Huai River. The next morning, I delivered a lecture, hosted by Professor Bi, on cooperative wireless networking to the audience of approximately 350 people in a huge lecture hall at the PLA University of Science and Technology. Again, it was a very gratifying experience to interact with the audience on various research issues.*

*I returned to Beijing via a high speed train from Nanjing, which took about 4 hours. I then took a direct flight by Air Canada from Beijing to Toronto, and a shuttle bus to home at Waterloo. The DLT experience was great. The interactions with audience, the hospitality of the hosts, the culture activities were all wonderful!*



*Xidian University, Xi'an, China, October 19, 2011*



*University of Science and Technology, Nanjing, China, October 25, 2011*

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### **Summary of Nanjing ComSoc Chapter's Report**

*Prof. Weihua Zhuang, IEEE ComSoc Distinguished Lecturer, from University of Waterloo, Canada gave a lecture titled "Cooperative Wireless Cooperation - A Cross-Layer Protocol Design Perspective" on October 25, 2011 at the Lecture Hall of Institute of Communication Engineering, PLA University of Science and Technology. The lecture started with a brief introduction of cooperative communications. Then, two fundamental issues of cooperative communications in distributed wireless networks were discussed, namely when to cooperate and whom to cooperate with. A concept of cooperation region in order to identify beneficial cooperative transmissions was also explored. To increase long-term network throughput, an optimal grouping strategy for efficient helper node selection was proposed and optimal helper placement was investigated. Some insights of the tradeoff between multi-user diversity gain at the physical layer and the helper contention overhead at the MAC layer were also presented.*

*Prof. Zhuang's lecture aroused much interest in the audience and many attendees raised their hands to ask questions. Professor Zhuang answered each question carefully and patiently. Due to the time limit, many attendees still had no chance to exchange face-to-face with Professor Zhuang, she gave her email address and welcomed emails from all audience.*

*After the lecture, many attendees spoke highly of both Professor Zhuang and her lecture. They hoped to have more chances to attend such kind of lectures.*

*The lecture attracted about 200 scholars and students from Nanjing University, Southeast University, Nanjing University of Posts and Telecommunications, Nanjing University of Aeronautics and Astronautics, PLA University of Science and Technology, and some other universities. More than 90 members from IEEE ComSoc Nanjing Chapter attended this lecture.*

*Written by Prof. Guangguo Bi, Chair of IEEE ComSoc Nanjing Chapter*

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### **Summary of Xian ComSoc Chapter's Report**

*With the help of IEEE communications society, the Distinguished Lecturer of IEEE communications society, Prof. Zhuang Weihua from the University of Waterloo visited Xi'an from Oct. 18, 2011 to Oct.19, 2011.*

*Prof. Zhuang arrived in Xi'an city in the afternoon of Oct. 18, 2011.*

*The IEEE comsoc Xi'an Chapter and Xidian University arranged a seminar in J112, the Lecture Hall of the Graduate School in Xidian University, for Prof. Zhuang Weihua on the morning of Oct.19, 2011. The seminar lasted more than 3 hours in which Prof. Zhuang made two lectures and answered the problems of the audiences. The titles of the two lectures are "Vehicular Networking - Applications and Challenges" and "Cooperative Networking - A Cross-Layer Protocol Design Perspective" respectively. The first lecture provide an overview of potential VANET applications, discuss research challenges, and provide some solutions to resource allocation and service provisioning in VANETs with a focus on medium access*

control. In the second lecture, Prof. Zhuang mainly discussed two fundamental issues of cooperative communications in distributed wireless networks and proposed an optimal grouping strategy for efficient helper node selection and investigate optimal helper placement.

More than two hundred audiences attended the seminar, including the teachers and students of Xidian University and other universities in Xi'an. After the seminar, some students and teachers made a discussion with Prof. Zhuang to study the research method and exchange the study results.

There are more than 1000 students and teachers in Xidian University studying the communications engineering. The lectures of Prof. Zhuang are mainly about the recent hot research areas in wireless communication, which are very popular to the students and teachers. The IEEE Comsoc Xi'an Chapter hopes that it can have more chance to invite distinguished researchers in communication theory and give lectures to the students and teachers.

Written by Prof. Rong Su, from Xidian University

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## 2011 AP DLT #2: 14 - 18 August 2011

Lecturer: George Rouskas

Hosting Chapter	2011 Chapter Chairs
Sri Lanka ComSoc Chapter	Dileeka Dias



The technical presentations were delivered at the following locations:-

1. **University of Colombo - 15 August 2011 (Monday)**  
Topic: "Power-Aware and Computationally-Efficient Optical Network Design"
2. **University of Moratuwa - 16 August 2011 (Tuesday)**  
Topic: "Power-Aware and Computationally-Efficient Optical Network Design"
3. **Earl's Regency Hotel, Kandy - 17 August 2011 (Wednesday)**  
Topic: "Perspectives on Future Internet Design"

### Summary Report from Dr. George Rouskas

I arrived in Colombo, Sri Lanka, early in the morning of Sunday, August 14, 2011, after a 27-hour trip. Prof. ChandikaWavegedara of the University of Muratuwamet me at the airport and escorted me to the Mount Lavinia Hotel, a colonial style hotel on the ocean that used to be the residence of the British governor. Later the same day, I had lunch with Prof. Wavegedara, Prof. Dileeka Dias, and Prof. ChulanthaKulasekere at a nearby restaurant. During the lunch discussion, I had the opportunity to learn about engineering research and education in Sri Lanka and the state of the local industry.

*My first lecture took place late in the afternoon of Monday, August 15, 2011, at the University of Colombo, following a tea reception hosted by the departmental faculty. Approximately 35 people attended the lecture, including a few faculty and students, but most attendees were from the local industry. Due to the late of the hour, the Q&A session was rather short, but I did have the chance to speak with several of the local industry attendees, and we have followed up with establishing connections on social networks.*

*The second lecture took place in the morning of Tuesday, August 16, 2011, at the University of Moratuwa. Before the lecture, Prof. Dias gave me a tour of several labs in the Department of Electronic & Telecommunication Engineering, including her own lab where students briefly presented their work on sensor networks and capturing the channel surfing habits of TV watchers. The lecture was attended by several faculty members and more than 50 engineering students; most students were undergraduate but a few Masters Students were also present. The department is in the process of building up its graduate degree programs; hence the number of graduate students is limited at this moment. This lecture was more interactive, and I was asked many interesting questions. Importantly, after the lecture, I was approached by several students who were interested in continuing for graduate studies abroad and wanted to learn more about opportunities in the U.S.A. Following a lunch discussion with Prof. Kulasekera, the head of the department, I boarded a taxi and started the five-hour trip to Kandy, a city in the middle of the country, about 70 miles from Colombo, where the ICIS conference took place. We arrived at the University of Peradeniya in the evening, and after a brief meeting with the conference organizers, I was taken to the Hotel Hilltop with panoramic views of the city of Kandy.*

*On Wednesday, August 17, 2011, I attended the opening ceremony of the ICIS conference at the University of Peradeniya that included presentations by government officials, University administrators, and local industry participants. Following the opening ceremony, attendees traveled to the Earl's Regency hotel in Kandy where the main technical program of the conference took place. My keynote presentation took place in mid-afternoon and was attended by most conference participants, including many students of the University of Peradeniya. Despite the fact that the conference program had slipped to the point that my presentation started more than 45 minutes later than its scheduled time, I received many questions and had substantial discussions on Future Internet Design (the topic of my talk) with several attendees following the session.*

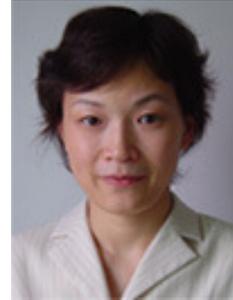
*In the morning of the following day, Thursday, August 18, 2011, I took a taxi back to Colombo airport for my flight to the U.S. Despite the long trip, this was a unique experience that gave me the opportunity to learn about the culture, University practices, and IT/Telecom industry efforts in a developing country and the challenges facing academics and students who work and study in an area located relatively far from the main centers of research and development.*

*Written by Dr. George Rouskas*

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## 2011 AP DLT #3: 21 - 29 August 2011

Lecturer: Qian Zhang



Hosting Chapter	2011 Chapter Chairs
Queensland ComSoc Chapter	Dhammika Jayalath
Australian Capital Territory (ACT) ComSoc Chapter	Abd-Krim Seghouane
New South Wales ComSoc Chapter	Jinhong Yuan

Prof. Qian Zhang delivered her technical presentations at the following locations:-

- 1. Queensland, Brisbane - 22 August 2011 (Monday)**  
Venue: Queensland University of Technology  
Topic: “Cooperative and Cognitive Wireless Networks”
- 2. Australian Capital Territory (ACT), Canberra - 24 August 2011 (Wednesday)**  
Venue: Australian National University  
Topic: “Cooperation in Cognitive Radio Networks”
- 3. New South Wales, Sydney - 25 August 2011 (Thursday)**  
Venue: University of New South Wales  
Topic: “Cooperation in Cognitive Radio Networks”

### Summary Report from Prof Qian Zhang

*I have visited Queensland ComSoc Chapter, Australian Capital Territory (ACT) ComSoc Chapter, and New South Wales (NSW) ComSoc Chapter from Aug. 22 or Aug. 26 and have given three talks during my visit. On 22nd August 2011, I gave a lecture entitled “Cooperation in Cognitive Radio Networks” at Queensland University of Technology. Two days later, another lecture was given at the College of Engineering and Computer Science at the Australian National University.*

*On 25th August, 2011, IEEE NSW Communications/Signal Processing/Ocean Engineering Joint Chapter hosted my lecture in Sydney. The lecture was presented at the School of Electrical Engineering and Telecommunications, University of New South Wales, Sydney, Australia. I came to the Lecture Theater around 3:00pm and chatted with old friends, previous colleagues, and researchers from NSW. The lecture started at 3:30pm, finished around 5:00pm, followed by questions and discussions. It was attended by 52 IEEE members, student members and a few non-members. Attendees included academic staff, postdoc fellows, research fellows, research students and engineers and they came from various NSW universities (University of New South Wales, University of Sydney, etc.), research institutes (CSIRO ICT Centre, NICTA), industry and organizations, where communications is a serious research and develop interest.*

*I provided a broader view and deep insight into the dynamic spectrum access and cognitive radio technologies. With two well-chosen examples, I showed that the cognitive radio as a novel paradigm can improve the spectrum utilization by allowing secondly users to reuse the unused spectrum owned by primary licensed users. I also presented using cooperation communication technologies in cognitive radio to fulfill the heterogeneous traffic demand. I highlighted the recent advances in this hot research area and industry trend. How the cognitive radio would affect the spectrum management policy and future wireless services were also discussed and raised many interests and questions from the audience. The lecture was well received by the members and audience. The seminar was followed by an afternoon tea which was sponsored by the IEEE NSW Section. Further questions directed at Prof Zhang were also asked and discussed in the afternoon tea. The discussion finished at 6:20pm.*

*The DLT was very successful. I would like take this opportunity to thank Dr. Dhammikajayalath, Dr. Abd-KrimSeghouane, and Prof. Jinhong Yuan for their kind host for my DLT in Australia. I would also like to thank Ms. Ewell Tan for coordinating this tour.*

*Written by Prof. Qian Zhang*



*Group photo of some of the attendees for lecture at University of New South Wales*



Gave lecture at Queensland University of Technology.

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**Summary of Queensland ComSoc Chapter's Report**

*Prof. Qian Zhang of Hong Kong University of Science and Technology (HKUST) delivered a talk in Brisbane Australia for IEEE communications society's distinguished lecture tour (DLT) on 22<sup>nd</sup> August 2011. The title of the talk was **"Cooperation in Cognitive Networks** and was held at the Gibson room of Queensland university of Technology. It was attended by a mix of academic staff, students and industry. The talk was paced and formatted skillfully to address the need of the wider audience. Prof. Qian*

*provided a broader insight into the cognitive radio and cooperation concepts. She also presented some recent advances in these areas. She also highlighted the importance of regulatory initiatives in these areas and the importance of spectrum efficiency measures for the future of wireless communications networks. There were some interesting questions from the audience at the end of the talk. The talk was followed by morning tea sponsored by the IEEE Queensland Section. This provided further networking opportunity for the audience.*

*As the chair of the signal processing and communications chapter of IEEE Queensland section, I hosted the Prof. Qian Zhang's visit to Australia together with two other Australian chapters; New South Wales and Australian Capital Territory. The whole tour organization process became an almost effortless task for us due to the invaluable support of Ms. Ewell Tan of IEEE Communications society. The whole tour was very well coordinated and organized by her.*

*Finally, we would like to take this opportunity to thank Prof. Qian Zhang for visiting us and Ms. Ewell Tan and the IEEE Communications society for facilitating the tour.*

*Written by Dr Dhammika Jayalath PhD, MEng, SMIEEE  
Chair, Signal Processing and Communications Chapter, IEEE Queensland Section  
School of Engineering Systems, Queensland University of Technology, Brisbane, Australia*

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**Summary of Australian Capital Territory (ACT) ComSoc Chapter's Report**

*Prof Qian Zhang of Hong Kong University of Science and Technology (HKUST) visited Malaysia 25rd – 25th August 2011 for IEEE ComSoc Distinguished Lecture Tours (DLT) in Australia. She delivered a talk titled "Cooperation in Cognitive Radio Networks" on the 23rd of August at Research School of Information Science and Engineering, The Australian National University at 11:00am. The talk was well attended, mainly with people from academia. Prof. Zhang, delivered a very well presented and organized lecture on the subject of cognitive radio and cooperation concepts in cognitive radio. She presented some new results in these areas and highlighted the importance of regulatory initiatives in these areas and the importance of spectrum efficiency measures for the future of wireless communications networks. Pr. Zhang was very accessible and the audience had the opportunity to interact with her on a number of subjects related to cognitive radio.*

*The ACT Signal processing and Communication Chapter would like to thank Ms Ewell for her effort in coordinating this DL. Without her help and support this tour couldn't have been with so little effort from our side.*

*Finally, we would like to thank Pr. Zhang for having accepted our invitation and the communication society for having supported this tour.*

*Written by Dr. Abd-krim Seghouane,  
Chair of the ACT Signal Processing and Communication Chapter*

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## **Summary of New South Wales (NSW) ComSoc Chapter's Report**

*On 25th August, 2011, IEEE NSW Communications/Signal Processing/Ocean Engineering Joint Chapter hosted the 2011 IEEE Communications Society's Distinguished Lecture Tour (DLT) in Sydney, Australia. This year's DLT was given by Prof Qian Zhang from Hong Kong University of Science and Technology (HKUST). Prof Zhang is a well known and is an active researcher in wireless communication and networking. She presented a lecture entitled "Cooperation in Cognitive Networks" at the School of Electrical Engineering and Telecommunications, University of New South Wales, Sydney, Australia. She came to the Lecture Theater around 3:00pm and chatted with old friends, previous colleagues, and researchers from NSW. The lecture started at 3:30pm, finished around 5:00pm, followed by questions and discussions. It was attended by 52 IEEE members, student members and a few non-members. Attendees included academic staff, postdoc fellows, research fellows, research students and engineers and they came from various NSW universities (University of New South Wales, University of Sydney, etc), research institutes (CSIRO ICT Centre, NICTA), industry and organizations, where communications is a serious research and develop interest.*

*Prof. Qian provided a broader view and deep insight into the dynamic spectrum access and cognitive radio technologies. With two well chosen examples, she showed that the cognitive radio as a novel paradigm can improve the spectrum utilization by allowing secondly users to reuse the unused spectrum owned by primary licensed users. She also presented using cooperation communication technologies in cognitive radio to fulfill the heterogeneous traffic demand. She highlighted the recent advances in this hot research area and industry trend. How the cognitive radio would affect the spectrum management policy and future wireless services were also discussed and raised many interests and questions from the audience.*

*The lecture by Prof Zhang was well received by the members and audience. The seminar was followed by an afternoon tea which was sponsored by the IEEE NSW Section. Further questions directed at Prof Zhang were also asked and discussed in the afternoon tea. This provided a good opportunity for the lecturer and the audience socializing with each other. The discussion finished at 6:20pm and was followed by an IEEE NSW Communication Chapter Committee Meeting.*

*The DLT by Prof Zhang was very successful. The presented topic in cognitive radio was highly relevant to many members' interests. DR Raymond Louie, an ARC Postdoc Fellow at the University of Sydney, commented "I am doing research directly related to Prof Zhang's presentation and I found this talk very informative and interesting. Thanks for organizing it."*

*As the chair of the Joint IEEE Communications/Signal Processing/Ocean Engineering NSW Chapter, I hosted the Prof. Qian Zhang's visit to Sydney, Australia, together with our NSW Chapter Committee Members, A/Prof Yonghui Li and Mr Olly D'Souza. We would like to thank Prof. Qian Zhang for her lecture. We would also like to thank Ms. Ewell Tan for coordinating the tour in Australia.*

*Further information about the DLT can be found on our Facebook Page:*

*<http://www.facebook.com/pages/IEEE-Communications-Signal-Processing-Ocean-Engineering-Joint-Chapter-NSW/134460109969908>*

*Written by Prof Jinhong Yuan,  
Chair, Joint IEEE Communications/Signal Processing/Ocean Engineering NSW Chapter*

**2011 AP DLT #4: 17 -25 October 2011**

**Lecturer: Marco Chiani**

Hosting Chapter	2011 Chapter Chairs
Bombay ComSoc Chapter	Raju Wadalkar
Pune ComSoc Chapter	Avinash Joshi
Hyderabad ComSoc Chapter	Deergha Rao Korrai
Kerala ComSoc Chapter	Sasi Pilacheri Meethal
Bangalore ComSoc Chapter	Subir Saha



Prof. Marco Chiani will be giving his technical presentations at the following locations:-

- 1. Bombay - 18<sup>th</sup> October 2011 (Tuesday)**  
Topic: “Fundamentals and Advances in MIMO Communication Systems and Networks” and “Codes on Graphs for Throughput Enhancement, Packet Loss Correction and Multiple Access”
- 2. Pune - 20 October (Thursday)**  
Topic: “Fundamentals and Advances in MIMO Communication Systems and Networks” and “Spectrum Sensing for Cognitive Radio: fundamental limits and multiple antenna based methods”
- 3. Hyderabad - 22 October (Saturday)**  
Topic: “Fundamentals and Advances in MIMO Communication Systems and Networks” and “Spectrum Sensing for Cognitive Radio: fundamental limits and multiple antenna based methods”
- 4. Kerala - 23 October (Sunday)**  
Topic: “Fundamentals and Advances in MIMO Communication Systems and Networks” and “Spectrum Sensing for Cognitive Radio: fundamental limits and multiple antenna based methods”
- 5. Bangalore - 24 October (Monday)**  
Topic: “Fundamentals and Advances in MIMO Communication Systems and Networks”

## Summary of Hyderabad ComSoc Chapter's Report

A DL tour of Dr. Marco Chiani, University of Bologna, Italy, was held in India during October 2011.

Dr. Chiani's lectures in Hyderabad were organized by the Communications and Signal Processing Societies Joint Chapter of the IEEE Hyderabad Section, and his accommodation and travel within Hyderabad were arranged by Hyderabad chapter. "Fundamentals and Advances in MIMO Communication Systems and Networks" is a tutorial and was held on 22 October 2011 at the Research and Training Unit for Navigational Electronics (NERTU) auditorium, University College of Engineering, Osmania University, Hyderabad from 9.30 a.m. to 1 p.m.. The audience for the tutorial are 36(thirty six) including students, Research scholars, participants from industry, and faculty from colleges. During this tutorial, Dr. Chiani provided the basic principles and applications of multiple antenna systems, including MIMO and distributed MIMO, and their analysis based on random matrix theory. The effect of space and time correlation on the capacity of MIMO channels is presented for a point-to-point link. In network scenarios, where many users employ MIMO, he discussed how the capacity decreases due to the presence of MIMO interferers. He has mentioned some applications such as wireless cellular systems, high-speed wireless LAN, WiMAX, as well as energyconstrained multi-node wireless systems. To the queries from audience, Dr. Chiani has answered that MIMO system can be applied to each individual subcarrier separately in a multicarrier scenario and mentioned that certainly hardware complexity increases if it is used in multicarrier systems. He has mentioned that OFDM with MIMO systems is currently used in WiMAX and MIMO system can also be implemented in frequency domain.

The lecture on: "Spectrum Sensing for Cognitive Radio: fundamental limits and multiple antenna based methods" was held on 22 October 2011 at the same NERTU auditorium from 5.30 p.m. to 7.30 p.m. The audience for the lecture are 30(thirty) including students, Research scholars, participants from industry, and faculty from colleges.

In this lecture Dr. Chiani has covered the basic aspects of cognitive radio (CR), with a review of the main motivations and definitions about CR. In particular, reviewed the "interweave" approach ("spectrum overlay"), the "underlay" approach, and the "relay based" approach. Then, specifically addressed spectrum sensing, with special emphasis on threshold design for the Energy Detector with estimated noise power. He also analyzed the performance of the ED with estimated noise power (ENP), addressing the threshold design and giving the fundamental limits and the conditions for the existence of the SNR wall. Finally, he has discussed spectrum sensing with multiple antennas and in particular showed how some recent results from random matrix theory can be used to estimate the number of signals in a cognitive radio scenario. To the issues raised by the audience, speaker replied that energy detector, which is a spectrum sensing technique is not valid in spread spectrum environment. The nodes in the cognitive radio system can be fixed or mobile. The decision of centralised node depends on factors such as the activeness as well as the proximity of the primary transmitter to a particular node in the network, the distance between the nodes in the network etc. However, the decision is taken adaptively. In feedback for both the tutorial and lecture, the participants have expressed satisfaction with the event organization and appreciated the lectures saying excellent, very informative, and useful.



Prof. Marco Chiani during his lecture at Hyderabad

*Written by Prof. Deergha Rao Korrai,*

*Chair of the Communications and Signal Processing Societies Joint Chapter, IEEE Hyderabad Section*

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### **Summary of Bangalore ComSoc Chapter's Report**

#### *Organizing process*

- 1. The IEEE informed the ComSoc Bangalore chapter of the upcoming lecture tour by Marco Chiani.*
- 2. A broadcast email was sent to all the IEEE members, Bangalore section.*
- 3. A senior faculty at the Indian Institute of Science (Professor T. Srinivas) arranged for Marco Chiani's stay at the IISc faculty guest house and the lecture venue at the ECE department auditorium.*
- 4. The local arrangement (transport) was arranged by the IEEE India Operations Director Harish Mysore.*

*The audience strength was about 80 participants. The audience consisted of a mix of industry professionals and students. There were more students (the lecture being held at a university campus made it easier for students to attend). The audience also consisted of senior faculty of the Indian Institute of Science.*

*The audience had several questions at the end of the lecture. The lecture topics were presented very well and concepts were very clearly explained. Since Multi-antenna systems are a recent area of research, there was a lot of enthusiasm with the students to attend the lecture.*

*The lecturer was well prepared and had all material ready for presentation. He also took time out of his schedule to visit another institution (IIIT Bangalore) to deliver his lecture in addition to his lecture scheduled at IISc. Offline discussions with Professor Marco Chiani were also very useful.*

*Many of the IEEE ComSoc executive committee members were present. Chair Dr. Saha, Co-Chair Mr. Dongre, Secretary Prof. Srinivas and Technical Activity Chair Dr. Sinha were present. Dr. Saha welcomed the guest and Dr. Sinha introduced the speaker to the audience. At the end of the talk, Mr. Dongre handed over a small token of appreciation to the speaker on behalf the Chapter.*



***Prof. Marco Chiani receiving a memento from Chapter Co-Chair, Mr. Shashidhara Dongre.***

*Written by Dr. Subir Saha, Bangalore ComSoc Chapter Chair*

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### **Summary of Kerala ComSoc Chapter's Report**

*IEEE Communications Society, Kerala chapter, organized a Distinguished Lecture Talk on the topic "Fundamentals and Advances in MIMO Communication Systems and Networks" on 23rd October, 2011 at Trivandrum, Kerala, India. The distinguished lecture was delivered by Prof. Marco Chiani of the University of Bologna, Italy. This event was technically co-sponsored and hosted by Centre for Development of Advanced Computing(C-DAC), Thiruvananthapuram. Mr.Sasi P.M, Chairperson, Communications Society and Immediate past chairperson of IEEE, Kerala section, in his Welcome address, introduced the speaker to the audience and gave a brief outline on the objective of this program.*



**Mr.Sasi P.M delivering the Welcome Speech**

*The speaker conducted a brief tour of wireless communication history and the evolution of wireless communications. Basic principles and applications of multiple antenna systems, including MIMO and distributed MIMO, and their analysis based on random matrix theory were discussed. Speaker explained how multiple antenna systems can exploit the spatial resource to mitigate multipath, to reduce multiuser interference, and to increase spectral efficiency. Procedures for practical design of MIMO-enabled systems such as the development of finite-complexity transmission/reception, signal processing algorithms namely space-time coding and spatial multiplexing schemes were also discussed. Case studies of network scenarios, where multiple users employ MIMO, were illustrated and it was explained how the capacity decreases due to the presence of MIMO interferers. The speaker emphasized the potential use of MIMO technologies in the area of wireless cellular systems, high-speed wireless LAN, WiMAX, as well as energy-constrained multi-node wireless systems.*



**Prof. Marco Chiani delivering the Distinguished Lecture**

The event was attended by 30 participants, most of them from R&D and academia with a few from industry. The talk was well received by participants. Open discussion session witnessed exchange of ideas and specific questions on Multi Antenna system design strategies were addressed by the speaker. A networking session was arranged before the commencement of the event to facilitate general interaction among the speaker and the participants. Audience gave the feedback that they had a comprehensive learning opportunity in a short span of time and had gained new insights into the potential application scenario of MIMO technology in the fields of Green ICT and Vehicular Communications. The event concluded with the proposal of Vote of Thanks by Mr. Suresh Narayanan, Vice-Chairperson, Communications Society, Kerala Chapter.

Written by Sasi P M, Kerala ComSoc Chapter Chair

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### 2011 AP DLT #5: Scheduled Plan 8 - 11 November 2011

Lecturer: Victor Leung

Hosting Chapter	2011 Chapter Chairs
Malaysia ComSoc Chapter	Sieh Kiong Tiong
Singapore ComSoc Chapter	Cheng Tee Hiang



Prof. Victor Leung will be giving his technical presentations at the following locations:-

- 1. Selangor, Malaysia - 9 November 2011 (Wednesday)**  
Venue: Universiti Kebangsaan Malaysia  
Topic: "Service and Network Convergence in Next Generation Networks"
  - 2. Penang, Malaysia - 10 November 2011 (Thursday)**  
Venue: Universiti Sains Malaysia  
Topic: "Networking of Automobiles - Applications, Challenges and Some Recent Results"
  - 3. Singapore - 11 November 2011 (Friday)**  
Venue: Nanyang Technological University  
Topic: "Networking of Automobiles - Applications, Challenges and Some Recent Results"
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This year we had successfully organized 5 DLTs program in the Asia Pacific Region. There is one DLT still in planning stage and is expected to be held around mid of February next year.

We are pleased to learn that there are many interests in hosting the DLT programs from the Chapters in Asia Pacific Region this year. Chapters have been very supportive of the program which is very encouraging.

We hope the technical presentations not only benefit the local members and participants, but the DLT also provides IEEE and the Communications Society a platform to promote its membership and increase its public visibility.

We would like to thank the AP Chapters for their continuous support and participation in making the DLT programs a great success. We would also like to give a big thank you to the lecturers for their willingness to travel and share their knowledge and expertise with our members in the Asia Pacific Region.

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