

Zhengguo Sheng

CONTACT INFORMATION

ADDRESS: Top Floor Flat, 10-12 Exhibition Road, London, SW7 2HF, United Kingdom
DOB: 25 June, 1983 <http://www.commsp.ee.ic.ac.uk/~zs206/>
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PROFILE

- Four years research experience in wireless comms, strong collaborations in UK & US
- Proven problem solving and analytical skills in modelling networking problems
- Knowledge of working in an international corporate environment as a team player
- Extensive presentation experience on projects reviews, conferences and invited talks

RESEARCH INTERESTS

- Cross-layer design and optimization for wireless ad hoc/sensor networks
- Multiple-input multiple-output systems and cooperative wireless systems design
- Information theory and stochastic models for wireless communications networks

EDUCATION

- OCT 2007– MAY 2011 Ph.D, ELECTRICAL AND ELECTRONIC ENGINEERING
Imperial College, London, United Kingdom
- Thesis Topic: Cooperative Wireless Networks
 - Advisor: Professor Kin K. Leung
- OCT 2006– OCT 2007 M.S. with Distinction, COMMUNICATION AND SIGNAL PROCESSING
Imperial College, London, United kingdom
- Thesis Topic: Quality-of-Service Routing Protocol for cooperative networks
 - Supervisor: Professor Kin K. Leung
 - Courses taken: Advanced Communication Theory, Mobile Communication, Information Theory, Probability and Stochastic Process, etc.
- SEP 2002– AUG 2006 B.Sc., Communication Engineering, Department of Communication Engineering
University of Electronic Science and Technology of China
- Courses taken: Mathematics Analysis, Analog and Digital Circuits Communication Principles, Digital Signal Process, etc.
 - Outstanding student and top 5% graduate (GPA: 3.64/4)

WORK EXPERIENCE

- SEP – DEC 2009 Summer Intern at **IBM T. J. Watson Research Center**, NY, U.S.A.
to work with Dr. Bong-Jun Ko and Dr. Kang-won Lee
- Investigated a new problem on mobility issues for wireless cooperative networks and submitted a paper within a short time period.
 - Involved in the program test of IBM Policy Management Library.
 - Exposed to a different industrial research environment, improved fast-learning, self-motivating and teamwork skills.
- AUG – SEP 2009 Summer Intern at **U.S. Army Research Laboratory (ARL)**, Adelphi, MD, U.S.A. *to work with Dr. Ananthram Swami*
- Identified new research problems and determined fundamental performance limits in military mobile multi-hop ad hoc wireless networks.
 - Collaborated with the wireless networking group to enhance the power control of cooperative communication for achieving military requirement.

RESEARCH EXPERIENCE

- 2009–2010 Interoperability of Heterogeneous Wireless Networks and Systems
to work with Dr. Bong-Jun Ko, Dr. Kang-won Lee and Dr. Ananthram Swami
- Served as a student researcher in the US/UK ITA Project.
 - Led collaborations among Imperial College, IBM US and ARL to tackle distributed self-organizing algorithms for resource allocation in MANETs using cooperative transmission.
 - Contributions: Milcom'10, IEEE JSAC.
- 2007–2009 Theoretical Foundations for Analysis and Design of Wireless Networks
to work with Prof. Kin Leung, Dr Zhiguo Ding, Prof. Dennis L. Goeckel and Prof. Don Towsley
- Served as a key researcher in the US/UK ITA Project.
 - Investigated cross-layer design for wireless cooperative networks; proposed QoS routing algorithms; analyzed the power efficiency, end-to-end performance of cooperative communication.
 - Contributions: VTC-spring'08, ICC'09, Globecom'09, ICC'10(2), PIMRC'10, Chinacom'10, IEEE Comm. Mag.

TEACHING

- FEB 2009 – **EE2: Communications II**, Imperial College
FEB 2010 Teaching Assistant: tutor
- Organizing study-group sessions for 2nd year undergraduates.
- NOV 2007 – **SC4: Probability and Stochastic Processes**
NOV 2009 Teaching Assistant: tutor and grader
- Providing tutorial sessions for 4th year undergraduates and MSc students
- JUL – **Central Lab of the Digital Signal Processing**
SEP 2005 Teaching Assistant
- Ran computer-based laboratories for 4th year undergraduates.

ACADEMIC ACTIVITIES

Academic Visiting

- Oct 2009 University of Massachusetts Amherst (UMASS), MA, U.S.A.
– Collaborated with UMass colleagues and investigated a fundamental problem on network capacity of wireless networks using cooperative transmission.
- Nov 2008 U.S. Army Research Laboratory (ARL), Adelphi, MD, U.S.A.
– Identified new research problems in the area of wireless communications for further investigation.
- Nov 2008 IBM T. J. Watson Research Center, NY, U.S.A.
– Introduced cooperative communication techniques, and discussed my research work with IBM researchers.
– Expanded my research interests and professional contacts.
- Dec 2008 University of Massachusetts Amherst (UMASS), MA, U.S.A.
– Participated in regular conference calls, gave technical presentations, and prepared quarterly research deliverables and newsletters.

Invited Talk

- May 2009 The Computer Laboratory, University of Cambridge, U.K.
“Cooperative Wireless Networks: From Radio to Network Protocol Designs”
- Dec 2008 University of Massachusetts Amherst (UMASS), MA, U.S.A.
“On the Design of a Quality-of-Service Driven Routing Protocol for Wireless Cooperative Networks”

- Nov 2008 IBM T. J. Watson Research Center, NY, U.S.A.
“Power Efficient Routing in Wireless Cooperative Networks”

AWARDS

- 2007 – 2010 Studentship of U.S.-U.K. [IBM/ITA Project](#), funded by U.S. Army Research and U.K. Ministry of Defence
- 2005 – 2006 “Outstanding Student, UESTC” awarded by The University of Electronic Science and Technology of China
- 2005 – 2006 “Top Grade University People’s Scholarship” awarded by The University of Electronic Science and Technology of China (Ranking 1st in 600 students)
- 2004 – 2005 “First-class University People’s Scholarship” awarded by The University of Electronic Science and Technology of China
- 2002 – 2004 “Second-class University People’s Scholarship” awarded by The University of Electronic Science and Technology of China

OTHER ACTIVITIES

- SEP 2010 **Student Helper** at Sensor Signal Processing for Defence Conference 2010 (SSPD 2010), Imperial College, London
 - Receptionist at the conference registration desk.
- JUL – **Receptionist at Beit Hall Hotel**, Imperial College, London
- SEP 2007
 - Helped organizing summer conferences held at Imperial College.
 - Checked in and checked out customers.
- AUG – **Network support and maintenance**, Personnel Bureau of Haidian District, Beijing, China
- SEP 2004
 - Participated in maintenance of the backbone switches and access routers.
 - Gained practical experience in network operations.

COMPUTER AND OTHER SKILLS

Computer:

- Experienced with C/C ++, MATLAB; familiar with OPNET, SQL.
- Extensive use of LaTeX, MS Office, Dreamweaver.
- Configuration experience with Cisco 2600 series routers.

Languages:

- English (fluent), Chinese (mother tongue).

REFERENCES

- Professor Kin K. Leung
Tanaka Chair Professor in Internet Technology *E-mail:* kin.leung@imperial.ac.uk
Electrical Engineering and Computing Departments, Imperial College, U.K.
- Dr Ananthram Swami
Wireless Communications and Networking *E-mail:* ananthram.swami@us.army.mil
U.S. Army Research Laboratory (ARL), Adelphi, MD, U.S.A.
- Dr. Kang-Won Lee
Manager, Wireless Networking Group *E-mail:* kangwon@us.ibm.com
IBM T. J. Watson Research Center, NY, U.S.A.
- Dr. Bongjun Ko
Research Staff Member, Wireless Networking Group *E-mail:* bongjun_ko@us.ibm.com
IBM T. J. Watson Research Center, NY, U.S.A.
- Dr. Zhiguo Ding
Lecturer *E-mail:* z.ding@newcastle.ac.uk
School of Electrical, Electronic, and Computer Engineering, Newcastle University

PUBLICATIONS

Journal Papers

1. **Z. Sheng**, Z. Ding and K. K. Leung, “Cooperative Wireless Networks: From Radio to Network Protocol Designs”, *IEEE Communication Magazine: Advances in Cooperative Wireless Networking*, May, 2011
2. **Z. Sheng**, B. J. Ko, A. Swami, K. W. Lee and K. K. Leung, “Power Efficient Decode-And-Forward Cooperative Relaying”, *submitted to IEEE JSAC on cooperative networking*
3. S. Yang, **Z. Sheng**, J. A. McCann and K. K. Leung, “Cooperative Flow Control, Routing and Scheduling in Wireless Sensor Networks”, *submitted to IEEE JSAC on cooperative networking*
4. **Z. Sheng**, Z. Ding and K. K. Leung, “A Study on Transmission Delay with Finite Block Length in Wireless Cooperative Networks”, *submitted to IEEE Trans. on Mobile Computing*
5. **Z. Sheng**, Z. Ding and K. K. Leung, “A Outage-based Analysis on Transmission Capacity of Decode-and-Forward Cooperation in Overlaid Wireless Networks”, *submitted to IEEE Trans. on Wireless Communication*

Conference Proceedings

1. **Z. Sheng**, B. J. Ko, A. Swami, K. W. Lee and K. K. Leung, “Power Efficiency of Decode-And-Forward Cooperative Relaying”, *Proc. of The Military Communications Conference (Milcom) 2010*, USA
2. **Z. Sheng**, B. J. Ko, A. Swami, K. W. Lee and K. K. Leung, “Analysis and Algorithms for Power Allocation in Decode-and-Forward Cooperative Relaying”, *Proc. of The Forth Annual Conference of The International Technology Alliance (ACITA) 2010*, September 15-16, London, UK
3. **Z. Sheng**, Z. Ding and K. K. Leung, “Error Performance Bounds for Routing Algorithms in Wireless Cooperative Networks”, *Proc. of 5th International ICST Conference on Communications and Networking in China (CHINACOM) 2010*, August 25-27, Beijing, China (Invited paper)
4. **Z. Sheng**, Z. Ding and K. K. Leung, “Transmission Capacity of Decode-and-Forward Cooperation in Overlaid Wireless Networks”, *Proc. of IEEE International Conference on Communications (ICC) 2010*, May 23-27, Cape Town, South Africa
5. **Z. Sheng**, Z. Ding and K. K. Leung, “Transmission Delay Analysis with Finite Coding Length in Wireless Cooperative Networks”, *Proc. of IEEE Global Communications Conference (Globecom) 2009*, December 1-4, Hawaii, USA
6. D. L. Goeckel, Z. Ding, **Z. Sheng**, S. Vasudevan, K. K. Leung and D. Towsley, “Multi-User Diversity for Secrecy in Cooperative Communication Links”, *Proc. of The Third Annual Conference of The International Technology Alliance (ACITA) 2009*, September 22-24, Maryland, USA
7. **Z. Sheng**, D. L. Goeckel, K. K. Leung and Z. Ding, “A Stochastic Geometry Approach to Transmission Capacity in Wireless Cooperative Networks”, *Proc. of IEEE International Symposium On Personal, Indoor and Mobile Radio Communications (PIMRC) 2009*, September 13-16, Tokyo, Japan
8. **Z. Sheng**, Z. Ding and K. K. Leung, “Interference Subtraction with Supplementary Cooperation in Wireless Cooperative Networks”, *Proc. of IEEE International Conference on Communications (ICC) 2009*, June 14-18, Dresden, Germany

9. **Z. Sheng**, Z. Ding and K. K. Leung, “Distributed and Power Efficient Routing in Wireless Cooperative Networks”, *Proc. of IEEE International Conference on Communications (ICC) 2009*, June 14-18, Dresden, Germany
10. **Z. Sheng**, Z. Ding and K. K. Leung, “On the Design of a Quality-of-Service Driven Routing Protocol for Wireless Cooperative Networks”, *Proc. of IEEE Vehicular Technology Conference (VTC) 2008*, May 11-14, Singapore