

# DR. YUAN LUO

## CURRENT POSITION

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Research Fellow  
Department of Computing  
Imperial College London

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## EDUCATION

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### The Chinese University of Hong Kong, Hong Kong

- Ph.D., Information Engineering Aug. 2011 - Aug. 2015  
Advisor: Prof. [Jianwei Huang](#) (Fellow, IEEE)

### University of California at Berkeley, Berkeley, United States

- Visiting Scholar, Department of Electrical Engineering and Computer Sciences Sept. 2014 - Mar. 2015  
Advisor: Prof. [Jean Walrand](#) (Fellow, IEEE)

### Beijing University of Posts and Telecommunications, Beijing, China

- M.S., Information & Communication Engineering Sept. 2008 - Apr. 2011  
Advisor: Prof. Ping Zhang  
Excellent Graduate Student Award

### Tianjin University, Tianjin, China

- B.S., Electronics Engineering (GPA:3.82/4, Rank: 3/149) Sept. 2004 - Jul. 2008  
Best Undergraduate Thesis

## WORKING EXPERIENCES

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- **Ennoval Technology Co. Ltd.** Shenzhen, China  
**Co-founder** Jul. 2012 - Jun. 2013
  - Our Ennoval Technology Ltd. was a start-up based on Hong Kong ICT creative fund. We provide a solution for cable fault monitoring in telecommunication access networks.
  - As a co-founder I supported our business plan via analyzing the impact of economic factors such as pricing, costs, and incentive mechanisms on the coverage of our monitoring system which is crucial for the product marketing.
  - I also involved in the entire process of capital raising and negotiation with the VCs.
- **SHARP Laboratories Co. Ltd** Shanghai, China  
**Researcher, in Wireless Communication Group** Apr. 2011 - Jul. 2011
  - I was in charge of developing L1&L2 protocols for LTE-A network based on 3GPP LTE-A Specifications.
  - I developed the whole program for the simulation validation.
  - I filed several patents.

## RESEARCH INTEREST

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- **Network Games and Economics**
  - Study the interplay between technological and economic factors of network
  - Design market-based mechanism that can affect the adoption outcomes of new network technologies, influence network design choices, and impact service innovation
- **Crowdsourcing and Human Computing**
  - Designing incentive mechanisms for obtaining high-quality data from crowdsourcing
  - Coordinating a large group of people for a complex joint task through online platform
- **Geo-location Database-Assisted TV White Space Network**
  - Utilizing white spaces (i.e., vacant TV channels) to satisfy skyrocketing wireless data demand
  - Optimization of network performance and analysis of new network architecture

## RECENT RESEARCH HIGHLIGHT

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- **IEEE WiOpt 2014: Trade Information, Not Spectrum: A Novel TV White Space Information Market Model**
  - *Academia Impact:* This paper proposed a novel information market model for the TV white space network to make profit and received the **Best Paper Award** (only the top 1%-rated paper was selected).

- *Industrial Impact*: Attract network operators for implementation in Hong Kong and was publicised by more than 20 influential public media in Hong Kong and the Mainland China (e.g., [CUHK Press](#), [Wenweipo](#), [Oriental Daily](#), [Phonix](#), [Sohu](#), [Sina](#), [China Daily](#)).

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## RESEARCH PROJECTS

- General Research Fund, Hong Kong Research Grants Council, “Coordination and Competition in Shared Spectrum: Market Mechanisms and Protocol Designs” (reference number: CUHK412713), HKD 836,450
- General Research Fund, Hong Kong Research Grants Council, “Economic Viability of Dynamic Spectrum Management” (reference number: CUHK412511), HKD 1,078,125
- The Major National S&T Program, China, “Specific Technologies in IMT-Advanced TDD” (reference number: 2009ZX03003-001)

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## SELECTED AWARDS

- **CUHK Young Scholar Thesis Award 2015** of the Chinese University of Hong Kong (only 1 awardee from Faculty of Engineering), 2016
- **CUHK Postgraduate Research Output Award 2015** of the Chinese University of Hong Kong (only 1 awardee from Faculty of Engineering), 2016
- **Best Paper Award** in IEEE WIOPT, 2014 (only top 1%-rated paper was selected)
- **Global Scholarship Programme for Research Excellence Award** of The Chinese University of Hong Kong, 2014
- **Overseas Research Attachment Programme Award** of The Chinese University of Hong Kong, 2014
- **Hong Kong PhD Fellowship**, 2011-2014 (top 3%)
  - The Highest Honor for a PhD Student in Hong Kong
- **Excellent Graduate Student Award** of Beijing University of Posts and Telecommunications, 2011
- **Best Undergraduate Thesis** of Tianjin University, 2008
- **First Prize** in National Undergraduate Electronic Design Contest, Tianjin Region, 2007

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## PUBLICATIONS

### Book

1. **Y. Luo**, L. Gao, and J. Huang, “Economics of Database-Assisted Spectrum Sharing”, Springer, July 2016.

### Journal

2. **Y. Luo**, L. Gao, and J. Huang, “An Integrated Spectrum and Information Market for Green Cognitive Communications”, *IEEE Journal on Selected Areas in Communications (JSAC)*, vol. 34, no. 12, pp. 3326-3338, Aug. 2016 (Impact Factor: 3.672).
3. **Y. Luo**, L. Gao, and J. Huang, “MINE GOLD to Deliver Green Cognitive Communications”, *IEEE Journal on Selected Areas in Communications (JSAC)*, vol. 33, no. 2, pp. 2749-2760, Dec. 2015 (Impact Factor: 3.672).
4. **Y. Luo**, L. Gao, and J. Huang, “Spectrum Reservation Contract Design in TV White Space Networks”, *IEEE Transactions on Cognitive Communications and Networking (Invited Paper)*, vol. 1, no. 2, pp. 147-160, June. 2015.
5. **Y. Luo**, L. Gao, and J. Huang, “Business Modeling for TV White Space Networks”, *IEEE Communications Magazine*, vol. 53, no. 5, pp. 82-88, May 2015 (Impact Factor: 5.125).
6. **Y. Luo**, L. Gao, and J. Huang, “Price and Inventory Competition in Oligopoly TV White Space Markets”, *IEEE Journal on Selected Areas in Communications (JSAC)*, vol. 33, no. 5, pp. 1002-1013, May 2015 (Impact Factor: 3.672).
7. L. Song, L. Li, X. Gao, H. Wang, and **Y. Luo**, “Gain Matrix Design Method to Ensure Reciprocity in TDD MIMO Relay Systems”, *IEICE Transactions on Communications*, vol. E94-B, no. 12, pp. 3395-3398, December, 2011.
8. **Y. Luo**, N. Shah, J. Huang, and J. Walrand, “Parametric Prediction from Parametric Agents”, *Operational Research*, revise & resubmit.

### Conference

1. **Y. Luo**, N. Shah, J. Huang, and J. Walrand, “Parametric Prediction from Parametric Agents”, *ACM NetEcon 2015 (in conjunction with ACM SIGMETRICS 2015 and ACM EC 2015)*, 2015 (acceptance rate 20% for long papers).

2. **Y. Luo**, L. Gao, and J. Huang, "HySIM: A Hybrid Spectrum and Information Market for TV White Space Networks", *IEEE International Conference on Computer Communications (INFOCOM)*, pp. 900–908, 2015 (acceptance rate 19%).
3. **Y. Luo**, L. Gao, and J. Huang, "Trade Information, Not Spectrum: A Novel TV White Space Information Market Model", *IEEE WiOpt (Best Paper Award)*, pp. 405–412, 2014.
4. **Y. Luo**, L. Gao, and J. Huang, "Information Market for TV White Space Market", *IEEE Workshop on Smart Data Pricing (SDP) (Invited Paper)*, pp. 604–609, May 2014.
5. **Y. Luo**, L. Gao, and J. Huang, "White Space Ecosystem: A Secondary Network Operator's Perspective", *IEEE Global Communications Conference (GLOBECOM)*, pp. 925–930, 2013.
6. **Y. Luo**, L. Gao, and J. Huang, "Spectrum Broker by Geo-location Database", *IEEE Global Communications Conference (GLOBECOM)*, pp. 5427–5432, 2012.
7. **Y. Luo**, L. Li, and Z. Liu, "A Hybrid Codebook Design Algorithm for MIMO Amplify-and-Forward Relaying System with Power Allocation and Precoding", *IEEE Global Communications Conference (GLOBECOM)*, pp. 1–5, 2010.
8. **Y. Luo**, L. Li, Q. Wang, and Z. Liu, "A Codebook-Based Precoding Method for MIMO Amplify-and-Forward Relaying System", *IEEE Vehicular Technology Conference (VTC-Fall)*, pp. 1-5, 2010.

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#### PATENT (FIVE CHINESE ISSUED PATENTS AND ONE AMERICAN PENDING PATENT)

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1. "A Codebook-based Signal Sending Method for MIMO Relaying System," China patent, issued CN101873203B
2. "Method, UE Device, and Base station for Transmitting and Receiving Downlink Physical HARQ Indexing," China patent, issued CN102882663A
3. "Method and Device for Downlink Grant Physical Downlink Control Channel," China patent, issued CN102883368A
4. "Channel State Information Feedback Method and User Equipment," China patent, issued CN102857277A
5. "Codebook Generating Method and Device of Pre-coding in Multiple-Input-Multiple-Output (MIMO) System," China patent, issued CN 102006111A
6. "Channel State Information Feedback Method and User Equipment," U.S. patent, WO2013001968

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#### PROFESSIONAL ACTIVITIES

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- **Tutorial**

- Economics of Database-Assisted Spectrum Sharing (IEEE DySPAN 2017)
- Economics of TV White Space Networks (IEEE ICC 2015)

- **Academic Organizer and Chair**

- Publicity chair of IEEE Smart Data Pricing (SDP) workshop 2016
- Session chair of IEEE GLOBECOM 2013

- **Technical Program Committee (TPC) Members**

- IEEE INFOCOM 2018
- WiOpt 2017
- IEEE GLOBECOM 2017

- **Technical Reviewers**

- Journal
  - \* IEEE Journal on Selected Areas in Communications (JSAC)
  - \* IEEE/ACM Transactions on Networking (TON)
  - \* IEEE Transactions on Mobile Computing (TMC)
  - \* IEEE Transactions on Wireless Communications (TWC)
  - \* IEEE Transactions on Vehicular Technology (TVT)
  - \* IEEE Communications Letters (CL)
  - \* IEEE Wireless Communications Letters (WCL)
  - \* Elsevier Computer Communications
- Conferences
  - \* IEEE Conference on Computer Communications (INFOCOM)
  - \* IEEE Global Communications Conference (GLOBECOM)
  - \* IEEE Wireless Communications and Networking Conference (WCNC)
  - \* IEEE Vehicular Technology Conference (VTC)
  - \* IEEE Smart Grid Communications (SmartGridComm)