

CURRICULUM VITAE

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RESEARCH INTERESTS

Information Theory: Physical Layer Security, Network Error Correction
Sparse Recovery: Compressive Sensing, Group Testing

QUALIFICATIONS

Ph.D. Electrical Engineering (2011), *California Institute of Technology*
Advisor: Prof Michelle Effros, GPA: 3.9/4.0,
M.Tech. Electrical Engineering (2005), *Indian Institute of Technology, Kanpur*
CPI: 10.0/10.0
B.Tech. Electrical Engineering (2003), *Indian Institute of Technology, Kanpur*
CPI: 9.0/10.0

WORK EXPERIENCE

Research Assistant Professor
The Chinese University of Hong Kong (August 2014 - present)
Postdoctoral Fellow
The Chinese University of Hong Kong (January 2012 - July 2014)
Research Assistant
California Institute of Technology (September 2011 - November 2011)

TEACHING AND MENTORING EXPERIENCE

- **Complex analysis and Differential Equations for Engineers**
Course code ENGG2420, Faculty of Engineering, Chinese University of Hong Kong (Fall 2014 and Fall 2016)
- **Advanced Topics in Information Engineering (*Compressed Sensing and Sparse Recovery*)**
Course code IERG6120, Department of Information Engineering, Chinese University of Hong Kong (Fall 2015)
- **Co-supervised three PhD students** at the Chinese University of Hong Kong
Sheng Cai (2015), Thesis title: *A Framework For Fast and Efficient Algorithms for Sparse Recovery Problems*
Pak Hou Che (2016), Thesis title: *Network Security*
Qiaosheng Zhang (*ongoing*), Tentative thesis title: *Covert Communications*

OTHERS

- 2005-06 **Atwood Fellowship** Awarded by the Department of Electrical Engineering, Caltech.
- 2005-2009 **CMI Graduate Supplement** Awarded by the Center of Mathematics of Information at Caltech.
- 2002 **Microsoft Award for Innovation** Awarded at the 3rd *IEEE Computer Society International Design Competition* at Washington D.C.
- TPC member for IEEE WCNC 2013 and 2014 and reviewer for several IEEE journals and conferences.
- Member of IEEE since 2001.

REFERENCES

Available on request

LIST OF PUBLICATIONS

ACCEPTED JOURNAL PAPERS

1. **"Efficient Noisy Group Testing"**, M. Jahangoshahi, S. Cai, M. Bakshi, S. Jaggi, *Accepted in IEEE Transactions on Information Theory*.
2. **"SHO-FA: Robust Compressive Sensing with order-optimal complexity, measurement and bits"**, M. Bakshi, S. Jaggi, S. Cai, M. Chen, *IEEE Transactions on Information Theory, December 2016, pp. 7419 - 7444*.

BOOK CHAPTERS

3. **"Network Coding and Data Compression"**, M. Bakshi, M. Effros, T. Ho, M. Médard in *Network Coding: Fundamentals and Applications*, ed. M. Médard and A. Sprintson, Academic Press, 2012.

CONFERENCE PAPERS AND JOURNAL PREPRINTS

4. **"Plausible Deniability over Broadcast Channels"**, M. Bakshi, V. Prabhakaran, *Proceedings of ISIT 2016; Extended version at arXiv:1601.06676* .
5. **"Computationally Efficient Deniable Communication"**, Q. Zhang, M. Bakshi, S. Jaggi, *Proceedings of ISIT 2016; Journal draft at arXiv:1607.02014*.
6. **"Reliable Deniable and Hidable Communication over Parallel Link Networks"**, S. Kadhe, S. Jaggi, M. Bakshi, A. Sprintson, *Proceedings of ISIT 2014. Journal draft at arXiv:1401.4451*.
7. **"Reliable Deniable Communication under Channel Uncertainty"**, P. H. Che, M. Bakshi, C. Chan, S. Jaggi, *Proceedings of ITW 2014; Journal draft at arXiv:1304.6693*.
8. **"Reliable, deniable and hidable communication: A quick survey"**, P. H. Che, S. Kadhe, M. Bakshi, C. Chan, S. Jaggi, A. Sprintson, *Proceedings of ITW 2014*.
9. **"Reliable, deniable and hidable communication"**, P. H. Che, M. Bakshi, C. Chan, S. Jaggi, *Proceedings of ITA Workshop 2014*.
10. **"Reliable Deniable Communication: Hiding messages in noise"**, P. H. Che, M. Bakshi, S. Jaggi. *Proceedings of ISIT 2013; Journal draft at arXiv:1304.6693*.
11. **"Arbitrarily varying networks: Capacity-achieving computationally efficient codes"**, P. Tian, S. Jaggi, M. Bakshi, O. Kosut, *Proceedings of ISIT 2016; Journal draft available at arXiv:1605.01834*
12. **"Reliable and secure communication over adversarial multipath networks: A survey"**, S. Kadhe, A. Sprintson, Q. Zhang, M. Bakshi, S. Jaggi, *Proceedings of ICICS 2015*.
13. **"Coding against a Limited-view Adversary: The Effect of Causality and Feedback"**, Q. Zhang, S. Kadhe, M. Bakshi, S. Jaggi, A. Sprintson, *Proceedings of ISIT 2015*.
14. **"Talking reliably, secretly, and efficiently: A "complete" characterization."**, Q. Zhang, S. Kadhe, M. Bakshi, S. Jaggi, A. Sprintson, *Proceedings of ITW 2015*.
15. **"On AVCs with quadratic constraints"**, F. Haddadpour, M. Jafari Siavoshani, M. Bakshi, S. Jaggi, *Proceedings of ISIT 2013*.
16. **"On equivalence for networks of noisy channels under byzantine attacks"**, M. Bakshi, M. Effros, T. Ho. *Proceedings of ISIT 2011; Journal draft available*.
17. **"Concatenated Polar codes"**, M. Bakshi, S. Jaggi, M. Effros, *Proceedings of ISIT 2010*.

LIST OF PUBLICATIONS (CONTD.)

18. **"Fundamental limits and achievable strategies for low energy compressed sensing with applications in wireless communication"**, T. Li, M. Bakshi, P. Grover, *Proceedings of SPAWC 2016; Journal draft at arXiv:1411.4253*.
19. **"SUPER: Sparse signals with unknown phases efficiently recovered"**, S. Cai, M. Bakshi, S. Jaggi, M. Chen, *Proceedings of ISIT 2014; submitted to IEEE Transactions on Information Theory*.
20. **"FRANTIC: A Fast Reference-based Algorithm for Network Tomography via compressive sensing"**, S. Cai, M. Bakshi, S. Jaggi, M. Chen, *Proceedings of COMSNETS 2014*.
21. **"Stochastic threshold group testing"**, C. L. Chan, S. Cai, M. Bakshi, S. Jaggi, V. Saligrama, *Proceedings of ITW 2013*.
22. **"GROTESQUE: Noisy Group Testing (Quick and Efficient)"**, M. Jahangoshahi, S. Cai, M. Bakshi, S. Jaggi, *Proceedings of the Allerton Conference 2013*.
23. **"SHO-FA: Robust Compressive Sensing with order-optimal complexity, measurement and bits"**, M. Bakshi, S. Jaggi, S. Cai, M. Chen, *Proceedings of the Allerton Conference 2012*.

24. **"On network coding capacity under on-off scheduling"**, M. Bakshi, M. Effros, *Proceedings of ISIT 2012*.
25. **"On zero-error source coding with feedback"**, M. Bakshi, M. Effros, *Proceedings of ISIT 2010*.
26. **"On feedback in network source coding"**, M. Bakshi, M. Effros, *Proceedings of ISIT 2009*.
27. **"A continuity theory for lossless source coding over networks"**, W. Gu, M. Effros, M. Bakshi, *Proceedings of the Allerton Conference 2008*.
28. **"On achievable rates for multicast in the presence of side information"**, M. Bakshi, M. Effros, *Proceedings of ISIT 2008*.
29. **"On Network Coding of Independent and Dependent Sources in Line Networks"**, M. Bakshi, M. Effros, W. Gu, R. Koetter, *Proceedings of ISIT 2007*.
30. **"On Error Exponent in Lossy Source Coding"**, M. Bakshi, R. K. Bansal, *Proceedings of the Allerton Conference 2005*.

DISSERTATIONS

- **"Network Coding and Distributed Compression in Large Networks"**, *PhD. Thesis, August 2011, California Institute of Technology*. Supervisor: Prof Michelle Effros.
 - Information theoretic study of rates required to transmit correlated sources over large networks
 - Network Coding capacity bounds with feedback and side information
 - Network-channel separation for networks with Byzantine
- **"Error exponent in Lossy Source Coding"**, *Master's Thesis, June 2005, Indian Institute of Technology Kanpur*. Supervisor: Prof R K Bansal.