

Bin Chen

Postdoctoral Researcher

Department of Electrical Engineering

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EDUCATION

Ph.D. in Cooperative Communication, September 2011 - November 2015
University College Dublin, Dublin, Ireland

Postgraduate in Signal and Information Processing, July 2010 - August 2011
Hefei University of Technology, Hefei, China

B.Sc. in Electronic Information Science and Technology, September 2006 - June 2010
Hefei University of Technology, Hefei, China

RESEARCH EXPERIENCE

Postdoctoral Researcher - Eindhoven University of Technology Oct. 2017 – Present

- Work on NLCAP: *Multi-dimensional coded modulation for maximizing nonlinear capacity in the optical channel*, which focus on developing novel constellation formats tailored particularly to the nonlinear regime of the optical channel taking into account the Kerr effect.

Postdoctoral Researcher - Eindhoven University of Technology June 2016 – Sep. 2017

- Work on PATRIOT-PUFs: *Anchors of Trust in Resource Constrained Environments* (<https://patriot-project.eu/>), which focus on authentication and security for resource constrained IoT devices.
- Mainly investigate on efficient PUF post-processing signal processing:
 - Selecting and designing error-correcting techniques and protocols for PUF-based key regeneration from the noisy “chip-fingerprints”.
 - Investigating and implementing the optimal multi-layered code design based on concatenated codes.

PhD candidate - University College Dublin September 2011 - November 2015
Advisor: Prof. Mark Flanagan

- Designed and conducted original research on developing practical and novel cooperative communication schemes based on distributed low-density coding to improve the performance of error rate and throughput. Mainly considered three aspects:
 - Cooperative communication protocol design (transmission and shared schemes, power resources allocation),
 - Relay operation design (estimation and forwarding strategies)
 - Physical layer design (encoding/decoding algorithm for integrated system).
- Coordinated three research projects that culminated in 5 first-author publications:
 - Science Foundation Ireland (SFI) “Signal-Space Cooperative Relaying Techniques for Future Wireless Networks”, 2014/09-2018/09

- Irish Research Council (IRC) “Low-Complexity Relaying Techniques for Future Wireless Networks”, 2013/10-2015/09
- Science Foundation Ireland (SFI) “Performance Characterization of Low-density Code Ensembles”, 2011/09-2015/08
- As teaching assistant, taught the laboratory section for *Communication theory* course. Organized lectures and designed laboratory demonstrations.

JOURNAL/CONFERENCE PUBLICATIONS

1. Journal Papers

- 1) **B. Chen**, D. N. K. Jayakody, M. F. Flanagan, "Low-Density Lattice Coded Relaying with Joint Iterative Decoding", *IEEE Transactions on Communications*, October 2015.
- 2) **B. Chen**, D. N. K. Jayakody, M. F. Flanagan, "Distributed Low Density Lattice Codes", *IEEE Communications Letters*, Jan 2016.
- 3) **B. Chen** and M. F. Flanagan, "Network-Turbo-Coding based Cooperation with Distributed Space-Time Block Codes", *Transactions on Emerging Telecommunications Technologies*, February 2014.
- 4) D. N. K. Jayakody, V. Skachek, **B. Chen**, “Spatially-Coupled LDPC Coding in Cooperative Wireless Networks”, *Eurasip Journal of Communications & Signal Processing*, February, 2016.
- 5) A. Rajaram, D. N. K. Jayakody, K. Srinivasan, **B. Chen***, V. Sharma, “Opportunistic-Harvesting: RF Wireless Power Transfer Scheme for Multiple Access Relays System”, in *IEEE Access*, vol. 5, pp. 16084-16099, 2017. (*Corresponding author)
- 6) A. Alvarado, T. Fehenberger. **B. Chen**, and F. M. J. Willems “Achievable Information Rates for Fiber Optics: Applications and Computations”, *submitted to Journal of Lightwave Technology*.

2. Conference Papers

- 1) **B. Chen** and M. F. Flanagan, “Network-Turbo-Coding based Cooperation with Distributed Space-Time Block Codes”, *19th European Wireless Conference, EW2013*, Guildford, UK, 16-18 April 2013.
- 2) **B. Chen**, D. N. K. Jayakody and M. F. Flanagan, " Cooperative Relaying with Low-Density Lattice Coding and Joint Iterative Decoding", *8th International Symposium on Turbo Codes and Iterative Information Processing*, Bremen, Germany, 18-22 August 2014.

- 3) D. N. K. Jayakody, Jun Li, **B. Chen** and M. F. Flanagan, " A Multilevel Soft Quantize-and-Forward Scheme for Multiple Access Relay Systems", *25th IEEE Annual Symposium on Personal, Indoor and Mobile Radio Communications Conference, PIMRC 2014*, Washington DC, USA, 2-5 September 2014.
- 4) D. N. K. Jayakody, V. Skachek, **B. Chen**, "Spatially-Coupled LDPC Coding in Cooperative Wireless Networks", *IEEE Wireless Communications and Networking Conference (WCNC)*, Doha, Qatar, 3-6 April 2016.
- 5) **B. Chen**, T. Ignatenko, F. Willems, "Efficient Key Generation Scheme for SRAM-PUFs using Polar Codes", *2017 Symposium on Information Theory and Signal Processing in the Benelux*, Delft, The Netherlands, 11-12 May 2017.
- 6) **B. Chen**, T. Ignatenko, F. Willems, R. Maes, E. van der Sluis, G. Selimis, "A Robust SRAM-PUF Key Generation Scheme Based on Polar Codes", *IEEE Globecom2017*, Singapore, 2-9 December 2017.

AWARDS AND HONORS

Grant

- Young Scientists grant, National Natural Science Foundation of China, **210,000 RMB**, 2018-2020

Scholarships

- Chinese government scholarships for PhD candidates (CSC) 2011 – 2015
- University College Dublin Scholarships for tuition fee 2011 – 2015
- Hefei University of Technology outstanding student scholarships (1st class) 2010, 2011
- Hefei University of Technology outstanding student scholarships (2nd class) 2009
- Hefei University of Technology outstanding student scholarships (3rd class) 2008

Awards

- No.2 in Hubing cup technological innovation competition, HFUT 2010
- Outstanding graduate of the university, Anhui province 2010
- No.1 in the second invitation programming competition of ACM/ICPC of Baidu cup 2007

PROFESSIONAL ACTIVITIES

Reviewer services

- IEEE Transactions on Communications
- IEEE Transactions on Wireless Communications

- IEEE Transactions on Vehicular Technology
- IEEE Communications Letters
- IEEE ACCESS
- Transactions on Emerging Telecommunications Technologies
- IEEE Flagship Conferences, e.g., ICC, GlobeCom, WCNC, PIMRC, VTC, etc.

ADMINISTRATIVE/LEADERSHIP EXPERIENCE

Vice president of UCD Chinese society Sept. 2012 – Oct. 2015

- Organized activities for Chinese students in UCD
- Helped UCD Confucius Institute to organize Chinese class

Vice president of Chinese Students and Scholars Association Dec. 2012 – Oct. 2015

- Organized Irish-Chinese events with Irish government and Chinese Embassy, developed the education and economy relations between China and Ireland
- Managed 17 Irish Universities' Chinese Students and Scholars Associations
- Developed and managed the website of *Chinese Students and Scholars Association* (<http://www.cssa.ie>)

SKILLS/INTERESTS

Software Skills

- Proficient in MatLab, Latex, MS Office
- Experience with C++, Python, Web design, HTML, EndNote.

Interests: Basketball, Football and Travelling.