Junting Chen

The Chinese University of Hong Kong, Shenzhen
2001 Longxiang Ave, RA 215
Shenzhen, Guangdong 518172, China

+86 (755) 2351 9652
juntingc@cuhk.edu.cn
http://chenjunting.org

EDUCATION

- **The Hong Kong University of Science and Technology**   Hong Kong SAR China
  Doctor of Philosophy in Electronic and Computer Engineering   Jun. 2015

  Topic: Design and Analysis of Iterative Algorithms via Nonlinear
            Control Theory for Time-varying Communication Systems
  Advisor: Professor Vincent K. N. Lau

- **Massachusetts Institute of Technology**   Cambridge, MA, USA
  Visiting Ph.D student   Jan. 2014 – Jan. 2015

  Topic: Cooperative localization
  Advisor: Professor Moe Z. Win

- **Nanjing University**   Nanjing, Jiangsu, China
  Bachelor of Science in Electronic Science and Engineering (1st ranked)   Jun. 2009

  Topic: Embedded systems and image processing
  Advisor: Professor Jie Yuan

RESEARCH SUMMARY

Ten years of experience in leading research institutions working on a broad range of communications and localization problems, including machine learning for cellular communication networks, sparse signal processing for underwater acoustic communications, MIMO and massive MIMIO systems, device-to-device (D2D) assisted cellular communications, cooperative localization, network resource optimization, and LTE systems. Widely published in leading journals.

EXPERIENCE

- **The Chinese University of Hong Kong, Shenzhen**   Shenzhen, China
  School of Science and Engineering
  Assistant Professor   Feb. 2019 – present

- **University of Southern California**   Los Angeles, CA, USA
  Ming Hsieh Department of Electrical Engineering   Nov. 2016 – Jan. 2019
  Postdoctoral Research Fellow
  Investigated signal processing and machine learning with applications of underwater source localization, autonomous systems and wireless communications (Advisor: Professor Urbashi Mitra).

- **EURECOM**   Sophia-Antipolis, France
  Department of Communication Systems   Apr. 2015 – Nov. 2016
  Postdoctoral Research Fellow
  Developed learning and optimization algorithms for cellular communications assisted by

unmanned aerial vehicles (UAVs). Developed advanced feedback, precoding, and user grouping strategies for limited feedback MIMO systems enabled by device-to-device communications (Advisor: Professor David Gesbert).

- **Massachusetts Institute of Technology**   Cambridge, MA, USA
  Laboratory for Information and Decision Systems (LIDS)   Jan. 2014 – Jan. 2015
  Research Assistant
  Developed a game theoretical resource allocation framework for efficient network localization under various application scenarios (Advisor: Professor Moe Z. Win).

- **The Hong Kong University of Science and Technology**   Hong Kong SAR China
  Center for Wireless Information Technology (CenWIT)   Sept. 2009 – Jan. 2015
  Research Assistant
  Developed a framework for iterative algorithm design and analysis for resource allocation in wireless communication systems under time-varying channels, with applications to multi-timescale tracking for optimal cross-layer resource allocation, delay-aware communications, and low complexity massive MIMO precoding (Advisor: Professor Vincent K. N. Lau).

- **National Instruments**   Shanghai, China
  LabVIEW Software Team   Mar. – May 2009
  Software Engineer Intern
  Developed and improved an automatic test platform (ATP) for the software compatibility test on the hardware modules, programmed in LabVIEW.

- **Nanjing University**   Nanjing, Jiangsu, China
  Department of Electronic Science and Engineering   Jan. 2008 – Jan. 2009
  Research Assistant
  Developed a remote iris recognition system featuring remote eye detection and tracking (Advisor: Professor Jie Yuan).

TEACHING

- **The Chinese University of Hong Kong, Shenzhen**
  Lecturer
  EIE2001 Basic Circuit Theory (UG, Fall'19)
  EIE3001 Signals and Systems (UG, Spring'19)

- **University of Southern California**
  Guest Lecturer
  EE503 Probability for Electrical and Computer Engineers (Fall'17)

- **Massachusetts Institute of Technology**
  Teaching Assistant
  16.09 Statistics and Probability (Spring'14)
  16.434/6.434 Statistics for Engineering and Scientists (Fall'14)

- **The Hong Kong University of Science and Technology**
  Guest Lecturer, Teaching Assistant, Sept. 2009 – Jun. 2013
  ELEC4120 Computer Communication Systems
  ELEC4410 Digital Communications
  ELEC5460 Wireless Communication
  EESM5539 Broadband Wireless Communications

EESM5670 Advanced Computer and Networking Architectures

MENTORING

- Mentoring graduate students:
  Wenjie Liu (PhD Student at CUHK-SZ, since 2019)

- Co-mentored junior graduate/undergraduate students:
  Amr Elnakeeb (PhD student at USC, 2017)
  Akshayaa Magesh (visiting student at USC, 2017)
  Omid Esrafilian (graduate student at EURECOM, 2016)
  Uday Yatnalli (visiting graduate student at EURECOM, 2016)
  Fuxing Zhuang (master student at HKUST, 2013)

PROJECT EXPERIENCE

- Office of Naval Research, USA (11/16 – 01/19): *Active Communication, Sensing & Control in Actuated Underwater Sensing Networks*

- European Research Council (3/16 – 10/16): *Cooperation Techniques for Future Communication Systems*

- Huawei Technologies, Paris, France (9/14 – 2/16): *Advanced Massive MIMO Algorithms*

- Huawei Technologies, Beijing, China (6/12 – 5/13): *Radio Resource Management for LTE Heterogeneous Networks*

- Hong Kong Applied Science and Technology Research Institute, Hong Kong SAR China (9/09 – 8/10): *WiMAX Simulation Platform*

- Huawei Technologies, Shenzhen, China (9/09 – 8/10): *Advanced MIMO Simulation Platform*

TALKS

- "Learning and Optimization for Dynamic 3D Networks Enabled by UAVs", Hong Kong University of Science and Technology, Hong Kong SAR China, August 22, 2018.

- "Data clustering using matrix factorization techniques for wireless propagation map reconstruction", IEEE Statistical Signal Processing Workshop, Freiburg, Germany, June 13, 2018.

- "Learning and Optimization for Dynamic 3D Networks Enabled by UAVs", Chinese University of Hong Kong, Shenzhen, Shenzhen, China, May 3, 2018.

- "Learning and Optimization for Dynamic 3D Networks Enabled by UAVs", University of Science and Technology of China, Hefei, China, April 14, 2018.

- "Sparse sensing for learning an obstructive propagation environment and optimal aerial relay placement", Information Theory and Applications Workshop (ITA), Pacific Beach, San Diego, Feburary 11 – 16, 2018.

- "Learning and optimization for dynamic 3D networks enabled by UAVs", University of California, Davis, January 29, 2018.

- "Underwater acoustic source localization using unimodal-constrained matrix factorization", Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, November 1, 2017.

- "Rotated eigenstructure analysis for source localization without energy-decay models", International Conference on Digital Signal Processing, London, August 24, 2017.

- "Learning for flying relays in cellular communications" (invited), Robotics: Science and Systems, MIT, Cambridge MA, July 16, 2017

- "Underwater Acoustic Source Localization without Energy-decay Models", EURECOM, France, June 1, 2017

- "Learning radio maps for UAV-aided wireless networks: a segmented regression approach" (poster), IEEE International Conference on Communications, Paris, May 24, 2017.

- "Optimal positioning of flying relays for wireless networks: a LOS map approach", IEEE International Conference on Communications, Paris, May 23, 2017.

- "Optimal dimensionality reduction In correlated massive MIMO systems with quantized channel feedback", Communication Theory Workshop (poster), Nafplio, Greece, May 16, 2016

- "Optimal dimensionality reduction In limited feedback correlated massive MIMO systems: from single user to multiuser case", Technical University of Munich, Munich, Germany, May 3, 2016

- "Large deviation delay analysis of queue-aware multiuser MIMO systems with two timescale mobile-driven feedback" (poster), IEEE International Conference on Acoustics, Speech, and Signal Processing, Vancouver, May 2013.

- "An analysis of verifications in microblogging social networks – Sina Weibo", International Conference on Distributive Computer System Workshop, Macau, June 2012.

- "Convergence analysis of saddle point problems in time-varying wireless systems – control theoretical approach" (poster), IEEE International Conference on Acoustics, Speech, and Signals Processing, Kyoto, March 2012.

HONORS AND AWARDS

- HKTIIT Post-Graduate Excellence Scholarships, HKUST, 2012

- SENG Overseas Research Award, HKUST, 2013

- SPS Travel Grant, IEEE Signal Processing Society, 2013

- HKUST Research Travel Grant, HKUST, 2012, 2013

- Finalist team in YDC E-challenge business plan competition (top 10 over 200 competitive teams), Hong Kong SAR China, 2011.

- Champion in NI VI Cup Electronic Design Competition (2008), National Instruments, Shanghai, China, 2008

- First class award in Intel Cup National Undergraduate Electronic Design Contest, Ministry of Education of China, 2008

- National scholarship, Nanjing University (3 out of 160 students awarded), 2008

- SAMSUNG scholarship, Nanjing University (2 out of 160 awarded), 2008
- Social service scholarship, Nanjing University, 2007
- People scholarship (first class honor), Nanjing University, 2006

PROFESSIONAL SERVICE

- Conference Session Chair: ITA 2018
- Technical Program Committee (TPC) Member:
  – IEEE JSAC, special issue on machine learning in wireless communications, 2019
  – IEEE VTC, Spring 2015, Fall 2015
- Reviewer for various international conferences
- Reviewer for journals (selected):
  – IEEE Journal on Selected Areas in Communications
  – IEEE Journal of Selected Topics in Signal Processing
  – IEEE Trans. on Signal Processing
  – IEEE Trans. on Wireless Communications
  – IEEE Trans. on Communications
  – IEEE Trans. on Mobile Computing
  – IEEE Trans. on Vehicular Technology
  – IEEE Communications Letters
  – IEEE Wireless Communications Letters

PROFESSIONAL MEMBERSHIPS

- Institute for Electrical and Electronics Engineers (IEEE), Member, 2015 – present
- Institute for Electrical and Electronics Engineers (IEEE), Student Member, 2012 – 2014

REFERENCES

(Available upon request.)

PUBLICATIONS

Journal Papers

J16. **J. Chen**, U. Mitra, "Data fusion for source localization using unimodal constrained tensor decomposition techniques", in preparation, 2018.

J15. **J. Chen**, D. Gesbert, and U. Mitra, "Optimal UAV placement over actual terrain structure for wireless communications", in preparation, 2018.

J14. **J. Chen**, D. Gesbert, "Local map-assisted positioning for flying wireless relays", under revision, preprint arXiv:1801.03595, 2018.

J13. **J. Chen**, U. Mitra, "Unimodality-Constrained matrix factorization for non-parametric-source localization", *IEEE Trans. Signal Process.*, vol. 67, no. 9, pp. 2371 – 2386, 2019, preprint arXiv:1711.07457, 2017.

J12. **J. Chen**, H. Yin, L. Cottatellucci, D. Gesbert, "Dual-regularized Feedback and Precoding for D2D Assisted MIMO Systems," *IEEE Trans. Wireless Commun.*, vol. 16, no. 10, pp. 6854–6867, 2017.

J11. **J. Chen**, H. Yin, L. Cottatellucci, D. Gesbert, "Feedback Mechanisms for FDD Massive MIMO With D2D-Based Limited CSI Sharing," *IEEE Trans. Wireless Commun.*, vol. 16, no. 8, pp. 5162–5175, 2017.

J10. **J. Chen**, W. Dai, Y. Shen, V. K. N. Lau, and M. Z. Win, "Resource Management Games for Distributed Network Localization," *IEEE J. Sel. Areas Commun.*, vol. 35, no. 2, pp. 317–329, Feb. 2017.

J9. **J. Chen**, W. Dai, Y. Shen, V. K. N. Lau, and M. Z. Win, "Power management for cooperative localization: A game theoretical approach," *IEEE Trans. Signal Process.*, vol. 64, no. 24, pp. 6517–6532, Dec. 2016.

J8. **J. Chen** and V. K. N. Lau, "Convergence analysis of mixed timescale cross-layer stochastic optimization," 2015, under revision, preprint: arXiv: 1305.0153.

J7. A. Liu, V. K. N. Lau, F. Zhuang, and **J. Chen**, "Two timescale joint beamforming and routing for multi-antenna D2D networks via stochastic cutting plane," *IEEE Trans. Signal Process.*, vol. 63, no. 18, pp. 4854–4865, 2015.

J6. A. Liu, V. K. N. Lau, L. Ruan, **J. Chen**, and D. Xiao, "Hierarchical radio resource optimization for heterogeneous networks with enhanced inter-cell interference coordination (eICIC)," *IEEE Trans. Signal Process.*, vol. 62, no. 7, pp. 1684–1693, Jan. 2014.

J5. **J. Chen** and V. K. Lau, "Two-tier precoding for FDD multi-cell massive MIMO time-varying interference networks," *IEEE J. Sel. Areas Commun.*, vol. 32, no. 6, pp. 1230–1238, Jun. 2014.

J4. **J. Chen** and V. K. Lau, "Large deviation delay analysis of queue-aware multi-user MIMO systems with two-timescale mobile-driven feedback," *IEEE Trans. Signal Process.*, vol. 61, no. 16, pp. 4067–4076, May 2013.

J3. **J. Chen** and V. K. N. Lau, "Delay analysis of max-weight queue algorithm for time-varying wireless ad hoc networks – Control theoretical approach," *IEEE Trans. Signal Process.*, vol. 61, no. 1, pp. 99–108, Oct. 2013.

J2. **J. Chen** and V. K. N. Lau, "Convergence analysis of saddle point problems in time-varying wireless systems – Control theoretical approach," *IEEE Trans. Signal Process.*, vol. 60, no. 1,

pp. 443–452, 2012.

J1. **J. Chen**, V. K. N. Lau, and Y. Cheng, "Distributive network utility maximization over time-varying fading channels," *IEEE Trans. Signal Process.*, vol. 59, no. 5, pp. 2395–2404, May 2011.

Refereed Conference Proceedings

C21. **J. Chen**, U. Mitra, and D. Gesbert, "Optimal UAV relay placement for single user capacity maximization over terrain with obstacles", in *Proc. IEEE Int. Workshop Signal Process. Adv. Wireless Commun.*, Cannes, France, Jul 2?-5, 2019.

C20. **J. Chen** and U. Mitra, "A modified Frank-Wolfe algorithm for tensor factorization with unimodal signals", in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Process.*, Brighton, UK, May 12?-17, 2019.

C19. **J. Chen** and U. Mitra, "Data clustering using matrix factorization techniques for wireless propagation map reconstruction", in *Proc. IEEE Statistical Signal Process. Workshop*, Freiburg, Germany, Jun 10–13, 2018.

C18. **J. Chen** and U. Mitra, "A tensor decomposition technique for source localization from multimodal data", in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Process.*, Calgary, Alberta, Canada, Apr. 15–20, 2018.

C17. **J. Chen**, O. Esrafilian, D. Gesbert, and U. Mitra, "Efficient algorithms for air-to-ground channel reconstruction in UAV-aided communications," in *Proc. IEEE Global Telecomm. Conf.*, Dec. 2017, Wi-UAV workshop.

C16. **J. Chen** and U. Mitra, "Underwater Acoustic Source Localization using Unimodal-constrained Matrix Factorization", in *Proc. Asilomar Conf. on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 2017.

C15. **J. Chen** and U. Mitra, "Rotated Eigenstructure Analysis for Source Localization without Energy-decay Models", in *Proc. Int. Conf. Digital Signal Process.*, London, Aug. 2017.

C14. **J. Chen** and D. Gesbert, "Optimal Positioning of Flying Relays for Wireless Networks: A LOS Map Approach", in *Proc. IEEE Int. Conf. Commun.*, Paris, May 2017.

C13. **J. Chen**, U. Yatnalli, and D. Gesbert, "Learning Radio Maps for UAV-aided Wireless Networks: A Segmented Regression Approach", in *Proc. IEEE Int. Conf. Commun.*, Paris, May 2017.

C12. **J. Chen**, H. Yin, L. Cottatellucci, and D. Gesbert, "Dual-regularized precoding: A robust approach for D2D-enabled massive MIMO," in *Proc. Asilomar Conf. on Signals, Systems, and Computers*, Pacific Grove, CA, USA, Nov. 6?9, 2016.

C11. **J. Chen** and D. Gesbert, "Joint user grouping and beamforming for low complexity massive MIMO systems", in *Proc. IEEE Int. Workshop Signal Process. Adv. Wireless Commun.*, Edinburgh, Jul. 2016.

C10. **J. Chen**, H. Yin, L. Cottatellucci, and D. Gesbert, "Precoder feedback versus channel feedback in massive MIMO under user cooperation," in *Proc. Asilomar Conf. on Signals, Systems, and Computers*, 2015.

C9. A. Liu, V. K. N. Lau, F. Zhuang, and **J. Chen**, "Mixed timescale cross layer optimization for multi-antenna D2D networks," in *Proc. IEEE Global Telecomm. Conf.*, San Diego, CA, Dec.

2015.

C8. **J. Chen**, W. Dai, Y. Shen, K. N. Lau, Vincent, and M. Z. Win, "Power management game for cooperative localization in asynchronous networks," in *Proc. IEEE Int. Conf. Commun., London*, Jun. 2015, pp. 1506–1511.

C7. **J. Chen** and V. K. N. Lau, "Multi-stream iterative SVD for massive MIMO communication systems under time varying channels," in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Process.*, Florence, May 2014, pp. 3152–3156.

C6. N. Wang, J. She, and **J. Chen**, "How "big Vs" dominate Chinese microblog: a comparison of verified and unverified users on Sina Weibo," in *Proc. ACM Conf. Web Sci.*, New York, Jun. 2014, pp. 182–186.

C5. **J. Chen** and V. K. N. Lau, "Convergence analysis of mixed timescale cross-layer stochastic optimization," in *Proc. Asilomar Conf. on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 2013, pp. 225–229.

C4. **J. Chen** and V. K. N. Lau, "Large deviation delay analysis of queue-aware multiuser MIMO systems with two timescale mobile-driven feedback," in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Process.*, Vancouver, May 2013, pp. 5036–5040.

C3. A. Liu, V. K. N. Lau, L. Ruan, **J. Chen**, and D. Xiao, "Hierarchical radio resource optimization for heterogeneous networks with dynamic ABS," in *Proc. IEEE Int. Conf. Commun.*, Budapest, Jun. 2013, pp. 5194–5198.

C2. **J. Chen** and J. She, "An analysis of verifications in microblogging social networks – Sina Weibo," in *Proc. Int. Conf. Distrib. Comput. Syst. Workshop (ICDCSW)*, Macau, Jun. 2012, pp. 147–154.

C1. **J. Chen** and V. K. N. Lau, "Convergence analysis of saddle point problems in time-varying wireless systems – control theoretical approach," in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Process.*, Kyoto, Mar 2012, pp. 3093-3096.

Patents

P5. **J. Chen**, H.Yin, L.Cottatellucci, and D.Gesbert, "A user communication device and method for cellular communication with a base station and D2D communication," European Patent Application, PCT/EP2016/075849, filed Oct. 26, 2016.

P4. **J. Chen** and D. Gesbert, "Devices and methods arranged to support user communication device grouping in a communication network," European Patent Application, PCT/EP2016/075803, filed Oct. 26, 2016.

P3. **J. Chen**, H. Yin, L. Cottatellucci, and D. Gesbert, "Adaptive CSI sharing mechanism for D2D enabled precoding in massive MIMO," European Patent Application, PCT/EP2016/069606, filed Aug. 18, 2016.

P2. V. K. N. Lau, A. Liu, **J. Chen**, D. Xiao, and T. Wu, "Dynamic resource block allocation method, apparatus, base station and system," Chinese Patent Application, PCT/CN2013/081180, filed Aug. 9, 2013.

P1. V. K. N. Lau and **J. Chen**, "Large deviation delay analysis of queue-aware multi-user MIMO systems with multi-timescale mobile-driven feedback," US Patent US9755711, filed Apr. 15, 2014, issued Sep. 5, 2017.

Theses

- Doctoral thesis: "*Design and Analysis of Iterative Algorithms via Nonlinear Control Theory*," Department of Electronic and Computer Engineering, The Hong Kong University of Science and Technology, Hong Kong SAR China, Jan 2015, thesis advisor: Professor Vincent K. N. Lau.