Vincent Y. F. Tan

Department of Electrical and Computer Engineering
Department of Mathematics
National University of Singapore, Singapore 119077
Telephone: +65-65162133
Email: vtan@nus.edu.sg
Website: http://www.ece.nus.edu.sg/stfpage/vtan/

Research Interests

Information Theory, Statistical Signal Processing, Machine Learning

Education

Massachusetts Institute of Technology
Ph.D. in Electrical Engineering and Computer Science, February 2011
Thesis topic: Large-Deviations Analysis and Applications of Learning Tree-Structured Graphical Models (Jin-Au Kong Outstanding Thesis Prize)

Cambridge University
B.A. (Class 1), M.Eng. (Distinction) in Electrical and Information Sciences, July 2005
Thesis topic: Blind Audio Source Separation (Charles Lamb Prize)

Professional Experiences

Dean's Chair Associate Professor, Dept. of Electrical and Computer Engineering (ECE) and Dept. of Mathematics, National University of Singapore (NUS)
Jan 2019 - present. Teaching classes, advising graduate students, internal service

Associate Professor, Dept. of Electrical and Computer Engineering (ECE) and Dept. of Mathematics, National University of Singapore (NUS)
Jan 2018 - present. Teaching classes, advising graduate students, internal service

Assistant Professor, Dept. of Mathematics, National University of Singapore (NUS)
Jul 2014 - Dec 2017. Teaching classes and advising graduate students

Assistant Professor, Dept. of Electrical and Computer Engineering (ECE), NUS
Jan 2014 - Dec 2017. Teaching classes and advising graduate students

Scientist, Data Analytics Dept., Institute for Infocomm Research (I^2R), Agency for Science, Technology and Research (A*STAR), Singapore
Feb 2012 - Dec 2013. Designing algorithms for analyzing high-dimensional data

Adjunct Assistant Professor, Dept. of ECE, NUS
Apr 2012 - Dec 2013. Teaching classes and advising graduate students

Post-Doctoral Researcher, Dept. of ECE, University of Wisconsin-Madison
Dec 2010 - Oct 2011. Worked with Prof. Stark Draper on information theoretic security, machine learning and coding theory

Graduate Research Assistant, Laboratory for Information and Decision Systems, Dept. of Electrical Engineering and Computer Science, Massachusetts Institute of Technology
Jan 2007 - Dec 2010. Advised by Prof. Alan Willsky and performed research in signal processing and machine learning, specifically in the learning of graphical models

Intern, E-Science Research Group, Microsoft Research Los Angeles, CA
Summer 2009. Worked with Dr. David Heckerman and Dr. Jonathan Carlson on machine learning techniques to infer structure and parameters of evolutionary trees

Intern, Machine Learning and Perception Group, Microsoft Research Cambridge U.K.
Summer 2008. Worked with Prof. Christopher Bishop, Dr. John Winn and clinician scientists in the University of Manchester, UK to apply Bayesian graphical modeling techniques to categorize childhood asthma classes automatically

Significant Grants

2018: National Research Foundation (NRF) Fellowship "Fundamental Limits for Sta-

tistical Learning Algorithms" (SGD $2,060,000)

2017: NRF Cybersecurity R&D Programme Grant "Machine Learning, Robust Optimisation, and Verification: Creating Synergistic Capabilities in Cybersecurity" (SGD $379,000)

2017: Ministry of Education Tier 2 Grant "Nonnegative Matrix Factorization: Geometry, Privacy and Statistical Lower Bounds" (SGD $450,000)

2015: Ministry of Education Tier 2 Grant "Network Communication with Synchronization Errors: Fundamental Limits and Codes" (SGD $500,000)

2014: NUS Young Investigator Award for the project "An Information-Theoretic Understanding of Machine Learning Algorithms" (SGD $500,000)

Awards and Honors

2018: IEEE Information Theory Society Distinguished Lecturer (2018/9)

2018: NUS Faculty of Engineering Young Researcher Award

2018: Singapore National Research Foundation (NRF) Fellowship (Class of 2018)

2015 to 2017: NUS Faculty of Engineering Teaching Commendation Award

2016: Finalist for the Singapore Young Scientist Award

2014: NUS Young Investigator Award

2014: Co-author of a paper shortlisted for the Best Student Paper Award of the IEEE Intl. Symposium on Information Theory

2011: Philip Yeo Prize for Outstanding Achievements in Research

2011: MIT EECS Jin-Au Kong Outstanding Doctoral Thesis Prize

2009: Student Travel Award for the IEEE Intl. Symposium on Information Theory

2006: A*STAR National Science Scholarship (Full funding for Ph.D. studies at MIT)

2005: Charles Lamb Prize: Top M.Eng. student in the Electrical and Information Sciences Tripos in Cambridge University

2001: Overseas Merit Scholarship, Public Service Commission (PSC) (Full funding for undergraduate studies at Cambridge University)

Recent Invited/ Keynote Talks

2019: Invited at the Taiwan Telecommunications Annual Meeting in Taichung

2019: Keynote speaker at the Australian Communications Theory Workshop in Sydney

2019: Invited speaker at the Iran Workshop on Comm. and Inform. Theory in Tehran

Teaching Experiences

Instructor, MA4270, Data Modeling & Computation at Math (Spring 2016–8)

Instructor, EE5137, Stochastic Processes at ECE (Fall 2017–8)

Instructor, EE5138R, Optimization for Comm. Systems at ECE (Spring 2015)

Instructor, EE5139R, Information Theory for Comm. Systems at ECE (Fall 2014–6)

Co-Instructor, EE5139R Comm. Systems at NUS (Fall 2012, Fall 2013)
Ratings at least one standard deviation above average in ECE Dept. Level 5000 courses

Tutorials, EE2012 Analytical Methods at NUS (Fall 2006, Spring 2013)

Instructor, Network Information Theory at University of Wisconsin-Madison (Fall 2011)

Teaching Assistant, 6.437 Inference and Information at MIT
Taught by Prof. Greg Wornell, Spring 2010, Rating 6.4/7.0.

Teaching Assistant, 6.241 Dynamic Systems and Control at MIT
Taught by Prof. Munther Dahleh, Fall 2008, Rating 6.5/7.0.

Publications

A full list of publications is given in Appendix A, or from the following website:

`http://www.ece.nus.edu.sg/stfpage/vtan/pubs.htm`

Professional Activities

Assoc. Editor, *IEEE Transactions on Signal Processing* (2018–present)

Guest Editor, Special Issue on "Information-Theoretic Methods in Data Acquisition, Analysis, and Processing" of the *IEEE Journal on Selected Topics in Signal Processing* (2017–2018)

Assoc. Editor, *IEEE Transactions on Green Comms. and Networking* (2016–present)

Assoc. Editor, *IEEE Transactions on Communications* (2015–present)

Member of the IEEE Machine Learning and Signal Processing Technical Committee (2012–2015)

Technical Program Committee Member for the following conferences

- IEEE Intl. Symposium on Information Theory (2014–2018)
- IEEE Intl. Workshop on Machine Learning and Signal Processing (2013)
- IEEE Intl. Conference on Acoustics, Speech and Signal Processing (2013, 2014)

Conference Organization

Co-organized the "Beyond i.i.d. in information theory" workshop in NUS (2014, 2017)

Co-organized the "Mathematical Tools of Information-Theoretic Security" Merlion workshop in Paris (2015)

Internal Service

Member of the Faculty (of Engg.) Promotion & Tenure Committee (B) (2018–present)

Coodinator of the ECE Department Search Committee (2018–present)

Graduate Students

Mr. YAN Hanshu (PhD expected in 2022)
Ms. HE Haiyun (PhD expected in 2022)
Ms. ZHONG Zixin (PhD expected in 2021; Math Dept.)
Mr. ANDERSON Boyd (PhD expected in 2019; Computer Science Dept.; Co-supervised with Y. Wang)
Mr. ZHOU Lin (PhD expected in 2018; ECE Dept.; Co-supervised with M. Motani)
Mr. TRUONG Vinh Lan (PhD expected in 2018; ECE Dept)
Mr. CAO Daming (Exchange student from Southeast University China; ECE Dept)

Mr. ZHAO Renbo (M.Sc. expected in 2018; Math Dept.)

Mr. LIU Zhaoqiang (PhD 2017; Math Dept.; Co-supervised with W. Bao)
Mr. LE Sy Quoc (PhD 2014, co-supervised with Prof. Mehul Motani)

Appendix A: Vincent Y. F. Tan's Publications

Summary Statistics of Journal Papers

1. Forty Two (42) in the *IEEE Transactions on Information Theory*
2. Eight (8) in the *IEEE Transactions on Signal Processing*
3. Three (3) in the *Journal of Machine Learning Research*
4. Three (3) in the *IEEE Transactions on Information Forensics and Security*
5. Two (2) in the *Communications in Mathematical Physics*
6. Two (2) in the *IEEE Communication Letters*
7. Two (2) in the *IEEE Journal of Selected Areas of Communications*
8. One (1) in the *American Journal of Respiratory and Critical Care Medicine*
9. One (1) in the *Annals of Statistics*
10. One (1) in *Entropy*
11. One (1) in the *Journal of Virology*
12. One (1) in the *IEEE Journal of Selected Topics in Signal Processing*
13. One (1) in the *IEEE Signal Processing Letters*
14. One (1) in the *IEEE Transactions on Communications*
15. One (1) in the *IEEE Transactions on Neural Networks and Learning Systems*
16. One (1) in the *IEEE Transactions on Pattern Analysis and Machine Intelligence*
17. One (1) in the *Information and Inference: A Journal of the IMA*
18. One (1) in *Nature Medicine*
19. One (1) in the *SIAM Journal on Discrete Mathematics*

Monographs

M1. Vincent Y. F. Tan, "Asymptotic Estimates in Information Theory with Non-Vanishing Error Probabilities" *Foundations and Trends on Communications and Information Theory*, vol. 11, no. 1-2, pp. 1 - 184, 2014

Journal Papers

The symbols * and † denote students and postdocs supervised by V. Y. F. Tan respectively.

J1. Lin Zhou*, Vincent Y. F. Tan, and Mehul Motani, "Second-Order Asymptotically Optimal Statistical Classification", *Information and Inference: A Journal of the IMA*, 2019

J2. Lei Yu† and Vincent Y. F. Tan, "Simulation of Random Variables under Rényi Divergence Measures of All Orders", *IEEE Transactions on Information Theory*, Vol. 65, No. 3, Mar 2019

J3. Lin Zhou*, Vincent Y. F. Tan, and Mehul Motani, "Refined Asymptotics for Rate-Distortion using Gaussian Codebooks for Arbitrary Sources", *IEEE Transactions on Information Theory*, Vol. 65, No. 3, Mar 2019

J4. Ling-Hua Chang, Po-Ning Chen, Vincent Y. F. Tan, Carol Wang†, and Yunghsiang S. Han, "On the Maximum Size of Block Codes Subject to a Distance Criterion", *IEEE Transactions on Information Theory*, Vol. 65, No. 3, Mar 2019

J5. Lei Yu† and Vincent Y. F. Tan, "Rényi Resolvability and Its Applications to the Wiretap Channel", *IEEE Transactions on Information Theory*, Vol. 65, No. 3, Mar 2019

J6. Vincent Y. F. Tan and Si-Hyeon Lee, "Time-Division is Optimal for Covert Communication over Some Broadcast Channels", *IEEE Transactions on Information Forensics and Security*, Vol. 14, Mar 2019

J7. Lin Zhou*, Vincent Y. F. Tan, and Mehul Motani, "The Dispersion of Universal Joint-Source Channel Coding for Arbitrary Sources and Additive Channels", *IEEE Transactions on Information Theory*, Vol. 65, No. 3, Mar 2019

J8. Lei Yu† and Vincent Y. F. Tan, "Asymptotic Coupling and Its Applications in Information Theory", *IEEE Transactions on Information Theory*, Vol. 65, No. 1, Jan 2019

J9. Mladen Kovačević† and Vincent Y. F. Tan, "Asymptotically Optimal Codes Correcting Fixed-Length Duplication Errors in DNA Storage Systems", *IEEE Communication Letters*, Vol. 22, No. 11, Pages 2194 – 2197, Nov 2018

J10. Mine Alsan†, Ranjitha Prasad† and Vincent Y. F. Tan, "Lower Bounds on the Bayes Risk of the Bayesian BTL Model with Applications to Comparison Graphs", *IEEE Journal on Selected Topics in Signal Processing*, Vol. 12, No. 5, Pages 975 – 988, Oct 2018

J11. Lin Zhou*, Vincent Y. F. Tan, Lei Yu* and Mehul Motani, "Exponential Strong Converse for Content Identification with Lossy Recovery", *IEEE Transactions on Information Theory*, Vol. 64, No. 8, Pages 5879 – 5897, Aug 2018

J12. Mladen Kovačević† and Vincent Y. F. Tan, "Codes in the Space of Multisets–Coding for Permutation Channels with Impairments", *IEEE Transactions on Information Theory*, Vol. 64, No. 7, Pages 5156 – 5169, Jul 2018

J13. Lin Zhou*, Vincent Y. F. Tan and Mehul Motani, "Achievable Moderate Deviations Asymptotics for Streaming Slepian-Wolf Coding", *IEEE Transactions on Information Theory*, Vol. 64, No. 5, Pages 3756 – 3780, May 2018

J14. Vincent Y. F. Tan and Masahito Hayashi, "Analysis of Remaining Uncertainties and Exponents under Various Conditional Rényi Entropies", *IEEE Transactions on Information Theory*, Vol. 64, No. 5, Pages 3734 – 3755, May 2018

J15. Lei Yu* and Vincent Y. F. Tan, "Wyner's Common Information under Rényi Divergence Measures", *IEEE Transactions on Information Theory*, Vol. 64, No. 5, Pages 3616 3623, May 2018

J16. Lan V. Truong* and Vincent Y. F. Tan, "On Gaussian MACs with Variable-Length Feedback and Non-Vanishing Error Probabilities", *IEEE Transactions on Information Theory*, Vol. 64, No. 4, Pages 2333 – 2346, Apr 2018

J17. Jiachun Liao, Lalitha Sankar, Vincent Y. F. Tan, and Flavio du Pin Calmon, "Hypothesis Testing under Mutual Information Privacy Constraints in the High Privacy Regime", *IEEE Transactions on Information Forensics and Security*, Vol. 13, No. 4, pp. 1058 – 1071, Apr 2018

J18. Silas L. Fong†, Vincent Y. F. Tan and Ayfer Özgür, "On Achievable Rates of AWGN Energy-Harvesting Channels with Block Energy Arrival and Non-Vanishing Error Probabilities", *IEEE Transactions on Information Theory*, Vol. 64, No. 3, Pages 2038 – 2064, Mar 2018

J19. Renbo Zhao*, Vincent Y. F. Tan and William B. Haskell, "Stochastic L-BFGS Revisited: Improved Convergence Rates and Practical Acceleration Strategies", *IEEE Transactions on Signal Processing*, Vol. 66, No. 5, Pages 1155 – 1169, Mar 2018

J20. Masahito Hayashi and Vincent Y. F. Tan, "Minimum Rates of Approximate Sufficient Statistics", *IEEE Transactions on Information Theory*, Vol. 64, No. 2, pp. 875 – 888, Feb 2018

J21. Renbo Zhao* and Vincent Y. F. Tan, "A Unified Convergence Analysis of the Multiplicative Update Algorithm for Regularized NMF", *IEEE Transactions on Signal Processing*, Vol. 66, No. 1, pp. 129 – 138, Jan 2018

J22. Silas L. Fong† and Vincent Y. F. Tan, "A Proof of the Strong Converse Theorem for Gaussian Broadcast Channels via the Gaussian Poincaré Inequality", *IEEE Transactions on Information Theory*, Vol. 63, No. 12, pp. 7737 – 7746, Dec 2017

J23. Mladen Kovačević†, Miloš Stojaković, and Vincent Y. F. Tan, "Zero-Error Capacity of P-ary Shift Channels and FIFO Queues", *IEEE Transactions on Information Theory*, Vol. 63, No. 12, pp. 7698 – 7707, Dec 2017

J24. Christopher T. Chubb, Vincent Y. F. Tan and Marco Tomamichel, "Moderate Deviations Analysis for Classical Communication over Quantum Channels," *Communications in Mathematical Physics*, Vol. 355, No. 3, pp. 1283 – 1315, Nov 2017

J25. Silas L. Fong† and Vincent Y. F. Tan, "A Tight Upper Bound on the Second-Order Coding Rate for Parallel Gaussian Channels with Feedback", *IEEE Transactions on Information Theory*, Vol. 63, No. 10, pp. 6474 – 6486, Oct 2017

J26. Mladen Kovačević[†] and Vincent Y. F. Tan, "Improved Bounds on Sidon Sets via Lattice Packing of Simplices", *SIAM Journal on Discrete Mathematics*, Vol. 31, No. 3, pp. 2269 – 2278, Sep 2017

J27. Zhaoqiang Liu[*] and Vincent Y. F. Tan, "Rank-One NMF-Based Initialization for NMF and Relative Error Bounds under a Geometric Assumption", *IEEE Transactions on Signal Processing*, Vol. 65, No. 18, pp. 4717 – 4731, Sep 2017

J28. Silas L. Fong[†] and Vincent Y. F. Tan, "Scaling Exponent and Moderate Deviations Asymptotics of Polar Codes for the AWGN Channel", *Entropy*, Vol. 19, No. 7, Article 364, Jul 2017

J29. Silas L. Fong[†] and Vincent Y. F. Tan, "Achievable Rates for Gaussian Degraded Relay Channels with Non-Vanishing Error Probabilities", *IEEE Transactions on Information Theory*, Vol. 63, No. 7, pp. 4183 – 4201, Jul 2017

J30. Lin Zhou[*], Vincent Y. F. Tan, and Mehul Motani, "Second-Order and Moderate Deviation Asymptotics for Successive Refinement", *IEEE Transactions on Information Theory*, Vol. 63, No. 5, pp. 2896 – 2921, May 2017

J31. Si-Hyeon Lee, Vincent Y. F. Tan, and Ashish Khisti, "Exact Moderate Deviation Asymptotics for Streaming Data Transmission", *IEEE Transactions on Information Theory*, Vol. 63, No. 5, pp. 2726 – 2736, May 2017

J32. Eldho K. Thomas[†], Vincent Y. F. Tan, Alexander Vardy and Mehul Motani, "Polar Coding for the Binary Erasure Channel with Deletions", *IEEE Communication Letters*, Vol. 21, No. 4, pp. 710 – 713, Apr 2017

J33. Changho Suh, Vincent Y. F. Tan, and Renbo Zhao[*], "Adversarial Top-K Ranking", *IEEE Transactions on Information Theory*, Vol. 63, No. 4, pp. 2201 – 2225, Apr 2017

J34. Lin Zhou[*], Vincent Y. F. Tan, and Mehul Motani "Discrete Lossy Gray-Wyner Revisited: Second-Order Asymptotics, Large and Moderate Deviations", *IEEE Transactions on Information Theory*, Vol. 63, No. 3, pp. 1766 - 1791, Mar 2017

J35. Lan V. Truong[*], Silas L. Fong[†] and Vincent Y. F. Tan, "On Gaussian Channels with Feedback under Expected Power Constraints and with Non-Vanishing Error Probabilities", *IEEE Transactions on Information Theory*, Vol. 63, No. 3, pp. 1746 - 1765, Mar 2017

J36. Masahito Hayashi and Vincent Y. F. Tan, "Equivocations, Exponents and Second-Order Coding Rates under Various Rényi Information Measures", *IEEE Transactions on Information Theory*, Vol. 63, No. 2, pp. 975 - 1005, Feb 2017

J37. Renbo Zhao[*] and Vincent Y. F. Tan, "Online Nonnegative Matrix Factorization with Outliers", *IEEE Transactions on Signal Processing*, Vol. 65, No. 3, pp. 555 - 570, Feb 2017

J38. Jonathan Scarlett, Vincent Y. F. Tan, and Giuseppe Durisi, "The Dispersion of Nearest-Neighbor Decoding for Additive Non-Gaussian Channels", *IEEE Transactions on Information Theory* Vol. 62, No. 12, pp. 81 - 92, Jan 2017

J39. Si-Hyeon Lee, Vincent Y. F. Tan and Ashish Khisti, "Streaming Data Transmission in the Moderate Deviations and Central Limit Regimes", *IEEE Transactions on Information Theory*, Vol. 62, No. 12, pp. 6816 - 6830, Dec 2016

J40. Silas L. Fong[†] and Vincent Y. F. Tan, "On the Scaling Exponent of Polar Codes for Binary-Input Energy-Harvesting Channels," *IEEE Journal of Selected Areas in Communications*, Vol. 34, No. 12, pp. 3540 - 3551, Dec 2016

J41. Silas L. Fong[†] , Vincent Y. F. Tan and Jing Yang, "Non-Asymptotic Achievable Rates for Energy-Harvesting Channels using Save-and-Transmit," *IEEE Journal of Selected Areas in Communications*, Vol. 34, No. 12, pp. 3499 - 3511, Dec 2016

J42. Silas L. Fong[†] and Vincent Y. F. Tan, "Strong Converse Theorems for Classes of Multimessage Multicast Networks: A Renyi Divergence Approach," *IEEE Transactions on Information Theory*, Vol. 62, No. 9, pp. 4953 - 4967, Sep 2016

J43. Silas L. Fong[†] and Vincent Y. F. Tan, "A Proof of the Strong Converse Theorem for Gaussian Multiple Access Channels," *IEEE Transactions on Information Theory*, Vol. 62, No. 8, pp. 4376 - 4394, Aug 2016

J44. Jonathan M. Carlson, Victor Y. Du, Nico Pfeifer, Anju Bansal, Vincent Y. F. Tan, Karen Power, Chanson J. Brumme, Anat Kreimer, Charles E. DeZiel, Nicolo Fusi, Malinda Schaefer, Mark A. Brockman, Jill Gilmour, Matt A. Price, William Kilembe, Richard Haubrich, Mina John, Simon Mallal, Roger Shapiro, John Frater, P. Richard Harrigan, Thumbi Ndung'u, Susan Allen, David Heckerman, John Sidney, Todd M. Allen, Philip J. R. Goulder, Zabrina L. Brumme, Eric Hunter, Paul A. Goepfert, "Impact of Pre-Adapted HIV Transmission", *Nature Medicine*, Vol. 22, No. 6, pp. 606 - 613, Jun 2016

J45. Fan Cheng[†] and Vincent Y. F. Tan, "A Numerical Study on the Wiretap Network with a Simple Network Topology", *IEEE Transactions on Information Theory*, Vol. 62, No. 5, pp. 2481 - 2492, May 2016

J46. Jonathan Scarlett and Vincent Y. F. Tan, "Second-Order Asymptotics for the Gaussian MAC with Degraded Message Sets", *IEEE Transactions on Information Theory*, Vol. 61, No. 12, pp. 6700 - 6718, Dec 2015

J47. Masahito Hayashi and Vincent Y. F. Tan, "Asymmetric Evaluations of Erasure and Undetected Error Probabilities" *IEEE Transactions on Information Theory*, Vol. 61, No. 12, pp. 6560 - 6577, Dec 2015

J48. Yanina Shkel, Vincent Y. F. Tan and Stark C. Draper, "Unequal Message Protection: Asymptotic and Non-Asymptotic Tradeoffs", *IEEE Transactions on Information Theory*, Vol. 61, No. 10, pp. 5396 - 5416, Oct 2015

J49. Vincent Y. F. Tan and Matthieu R. Bloch, "Information Spectrum Approach to Strong Converse Theorems for Degraded Wiretap Channels", *IEEE Transactions on Information Forensics and Security*, Vol. 10, No. 9, pp. 1891 - 1904, Sep 2015

J50. Marco Tomamichel and Vincent Y. F. Tan, "Second-Order Asymptotics for the Classical Capacity of Image Additive Quantum Channels," *Communications in Mathematical Physics*, Vol. 338, No. 1, pp. 103 - 137, Aug 2015

J51. Sy-Quoc Le*, Vincent Y. F. Tan and Mehul Motani, "A Case Where Interference Does Not Affect the Channel Dispersion," *IEEE Transactions on Information Theory*, Vol. 61, No. 5, pp. 2439 - 2453, May 2015

J52. Vincent Y. F. Tan and Marco Tomamichel, "The Third-Order Term in the Normal Approximation for the AWGN Channel," *IEEE Transactions on Information Theory*, Vol. 61, No. 5, pp. 2430 - 2438, May 2015

J53. Shun Watanabe, Shigeaki Kuzuoka and Vincent Y. F. Tan, "Non-Asymptotic and Second-Order Achievability Bounds for Coding With Side-Information," *IEEE Transactions on Information Theory*, Vol. 61, No. 4, pp. 1574 - 1605, Apr 2015

J54. Vincent Y. F. Tan, "On the Reliability Function of the Discrete Memoryless Relay Channel," *IEEE Transactions on Information Theory*, Vol. 61, No. 4, pp. 1550 - 1573, Apr 2015

J55. Tzu-Han Chou, Vincent Y. F. Tan and Stark C. Draper, "The Sender-Excited Secret-Key Agreement Model: Capacity, Reliability and Secrecy Exponents," *IEEE Transactions on Information Theory*, Vol. 61, No. 1, pp. 609 - 627, Jan 2015

J56. Hong Cao, Vincent Y. F. Tan and John Z. F. Pang, "A Parsimonious Mixture of Gaussian Trees Model for Oversampling in Imbalanced and Multi-Modal Time-Series Classification" *IEEE Transactions on Neural Networks and Learning Systems*, Vol. 25, No. 12, pp. 2226 - 2239, Dec 2014

J57. Marco Tomamichel and Vincent Y. F. Tan, "Second-Order Coding Rates for Channels with State," *IEEE Transactions on Information Theory*, Vol. 60, No. 8, pp. 4427 - 4448, Aug 2014

J58. Vincent Y. F. Tan, "A Formula for the Capacity of the General Gel'fand-Pinsker Channel" *IEEE Transactions on Communications*, Vol. 62, No. 6, pp. 1857 - 1870, Jun 2014

J59. Vincent Y. F. Tan and George K. Atia, "Strong Impossibility Results for Sparse Signal Processing," *IEEE Signal Processing Letters*, Vol. 21, No. 3, pp. 260 - 264, Mar 2014

J60. Vincent Y. F. Tan and Oliver Kosut, "On the Dispersions of Three Network Information Theory Problems," *IEEE Transactions on Information Theory*, Vol. 60, No. 2, pp. 883 - 903, Feb 2014

J61. Marco Tomamichel and Vincent Y. F. Tan, "A Tight Upper Bound for the Third-Order Asymptotics for Most Discrete Memoryless Channels," *IEEE Transactions on Information Theory*, Vol. 59, No. 11, pp. 7041 - 7051, Nov 2013

J62. Gang Yang, Vincent Y. F. Tan, Chin Keong Ho, See Ho Ting and Yong Liang Guan, "Wireless Compressive Sensing for Energy Harvesting Sensor Nodes over Fading Channels," *IEEE Transactions on Signal Processing*, Vol. 61, No. 18, pp. 4491 - 4505, Sep 2013

J63. Vincent Y. F. Tan and Cédric Févotte, "Automatic Relevance Determination in Nonegative Matrix Factorization with the β-Divergence," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 35, No. 7, pp. 1592 - 1605, Jul 2013

J64. Animashree Anandkumar, Vincent Y. F. Tan, Furong Huang and Alan S. Willsky, "High-Dimensional Gaussian Graphical Model Selection: Walk Summability and Local Separation Criterion," *Journal of Machine Learning Research*, Vol. 13, pp. 2293 - 2337, Aug 2012

J65. Animashree Anandkumar, Vincent Y. F. Tan, Furong Huang and Alan S. Willsky, "High-Dimensional Structure Estimation of Ising Models: Local Separation Criterion," *Annals of Statistics*, Vol. 40, No. 3, pp. 1346 - 1375, 2012

J66. Jonathan M. Carlson, Jennifer Listgarten, Nico Pfeifer, Vincent Y. F. Tan, Carl Kadie, Bruce D. Walker, Thumbi Ndung'u, Roger Shapiro, John Frater, Zabrina L. Brumme, Philip J. R. Goulder, David Heckerman, "Widespread Impact of HLA Restriction on Immune Control and Escape Pathways in HIV-1" *Journal of Virology*, Vol. 86, No. 9, pp. 5230 - 5243, May 2012.

J67. Vincent Y. F. Tan, Laura Balzano and Stark C. Draper, "Rank Minimization over Finite Fields: Fundamental Limits and Coding-Theoretic Interpretations," *IEEE Transactions on Information Theory*, Vol. 58, No. 4, pp. 2018 - 2039, Apr 2012

J68. Myung Jin Choi, Vincent Y. F. Tan, Animashree Anandkumar and Alan S. Willsky, "Learning Latent Tree Graphical Models," *Journal of Machine Learning Research*, Vol. 12, pp. 1771 - 1812, May 2011

J69. Vincent Y. F. Tan, Animashree Anandkumar and Alan S. Willsky, "Learning High-Dimensional Markov Forest Distributions: Analysis of Error Rates," *Journal of Machine Learning Research*, Vol. 12, pp. 1617 - 1653, May 2011

J70. Vincent Y. F. Tan, Animashree Anandkumar, Lang Tong and Alan S. Willsky, "A Large-Deviation Analysis of the Maximum-Likelihood Learning of Markov Tree Structures," *IEEE Transactions on Information Theory*, Vol. 57, No. 3, pp. 1714 - 1735, Mar 2011

J71. Vincent Y. F. Tan, Sujay Sanghavi, John W. Fisher III and Alan S. Willsky, "Learning Graphical Models for Hypothesis Testing and Classification," *IEEE Transactions on Signal Processing*, Vol. 58, No. 11, pp. 5481 - 5495, Nov 2010

J72. Angela Simpson[@], Vincent Y. F. Tan[@], John Winn, Markus Svensen, Chris Bishop, David Heckerman, Iain Buchan and Adnan Custovic, "Beyond Atopy: Multiple Patterns of Sensitization in Relation to Asthma in a Birth Cohort Study," *American Journal of Respiratory and Critical Care Medicine*, Vol. 181, pp. 1200 - 1206, Jun 2010 ([@]Co-first Authorship)

J73. Vincent Y. F. Tan, Animashree Anandkumar and Alan S. Willsky, "Learning Gaussian Tree Models: Analysis of Error Exponents and Extremal Structures," *IEEE Transactions on Signal Processing*, Vol. 58, No. 5, pp. 2701 - 2714, May 2010

J74. Vincent Y. F. Tan and Vivek K. Goyal, "Estimating Signals with Finite Rate of Innovation from Noisy Samples: A Stochastic Algorithm," *IEEE Transactions on Signal Processing*, Vol. 56, No. 10, pp. 5135 - 5145, Oct 2008

Highly-Selective Computer Science Conference Papers

C1. Boyd Anderson*, Shenggao Zhu, Ke Yang, Jian Wang, Hugh Anderson, Chao Xu Tay*, Vincent Y. F. Tan, and Wang Ye "MANA: Designing And Validating A User-Centered Mobility Analysis System", *Proc. of the 20th Intl. ACM SIGACCESS Conference on Computers and Accessibility (ASSETS)*, Galway, Ireland 2018

C2. Lei Yu[†] and Vincent Y. F. Tan, "Rényi Resolvability and Its Applications to the Wiretap Channel", *Proc. of the 10th Intl. Conference on Information Theoretic Security (ICITS)*, Hong Kong, 2017

C3. Renbo Zhao*, William B. Haskell, and Vincent Y. F. Tan, "Stochastic L-BFGS Revisited: Improved Convergence Rates and Practical Acceleration Strategies", *Proceedings of the Uncertainty in Artificial Intelligence (UAI) Conference*, Sydney, Australia, 2017

C4. Renbo Zhao*, Vincent Y. F. Tan, and Huan Xu "Online Nonnegative Matrix Factorization with General Divergences", *International Conference on Artificial Intelligence and Statistics (AISTATS)*, Fort Lauderdale, FL, 2017

C5. Animashree Anandkumar, Vincent Y. F. Tan, and Alan S. Willsky, "High-Dimensional Graphical Model Selection: Tractable Graph Families and Necessary Conditions", *Proc. of the Neural Information Processing Systems (NIPS)*, Granada, Spain, 2011