Vincent Y. F. Tan

Department of Mathematics
Department of Electrical and Computer Engineering
National University of Singapore, Singapore 119077
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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

Full Professor, Dept. of Mathematics and Dept. of Electrical and Computer Engineering (ECE), National University of Singapore (NUS)
Jul 2023 - present. Teaching classes, advising graduate students, internal service

Associate Professor, Dept. of Mathematics and Dept. of Electrical and Computer Engineering (ECE), National University of Singapore (NUS)
Aug 2022 - present. Teaching classes, advising graduate students, internal service

Dean's Chair Associate Professor, Dept. of Electrical and Computer Engineering (ECE) and Dept. of Mathematics, National University of Singapore (NUS)
Jan 2019 - Jul 2022. 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 - Dec 2018. 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 ma-

chine 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

2022: Ministry of Education Tier 2 Grant "Learning Latent Structure of High-Dimensional Data with Adversarial Training" (SGD $476,000$)

2021: DESCARTES: A CREATE Program on AI-based Decision making in Critical Urban Systems, Workpackage 3: Optimization-Driven Hybrid AI (SGD $3,600,000$)

2018: National Research Foundation (NRF) Fellowship "Fundamental Limits for Statistical 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 $500,000$)

Research Awards

2023: Faculty of Science Award in Mentorship Excellence (Research Category)

2022: Reappointed to a Dean's Chair Associate Professorship (College of Design and Engineering)

2019: Appointed to a Dean's Chair Associate Professorship (Faculty of Engineering)

2019: NUS Young Researcher Award

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

2018: NUS Faculty of Engineering Young Researcher Award

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

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 (ISIT)

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)

Teaching Awards

2020/21: Annual Teaching Excellence Award (University level)

2020/21: Finalist for the University's Outstanding Educator Award (University level)

2020/21: Engineering Educator Award

2019/20: Engineering Educator Award

2017/18: NUS Faculty of Engineering Teaching Honours List

2016/17: NUS Faculty of Engineering Teaching Commendation List

2015/16: NUS Faculty of Engineering Teaching Commendation List

2014/15: NUS Faculty of Engineering Teaching Commendation List

Recent Invited/ Keynote Talks

2022: Tutorial Speaker at the International Joint Conference on Artificial Intelligence (IJCAI)

2022: Tutorial Speaker at the International Conference on Acoustics, Speech, and Signal Processing (ICASSP)

2022: Plenary Speaker at the National Conference on Communications (NCC), IIT Bombay

2021: Tutorial Speaker at the International Symposium on Information Theory (ISIT)

2021: Invited Speaker at the Georgia Tech Machine Learning Seminar Series

2019: Invited speaker at the Low Rank Matrices and Applications (LRMA) Workshop in Mons, Belgium

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

2019: Keynote speaker at the Taiwan Telecommunications Annual Meeting in Taichung

2019: Keynote speaker at the Australian Comms. Th. Workshop (AusCTW) in Sydney

Teaching Experiences

Instructor, EE2012A *Analytical Methods at NUS* (Spring 2022)

Instructor, MA3110, *Mathematical Analysis II* at Math (Fall 2019)

Instructor, MA6241, *Bandit Algorithms* at Math (Spring 2019)

Instructor, MA4270, *Data Modeling & Computation* at Math (Spring 2016–8, Fall 2021)

Instructor, EE5137, *Stochastic Processes* at ECE (Fall 2017–8, Spring 2021–22)

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

Instructor, EE5139R, *Information Theory for Comm. Systems* at ECE (Fall 2014–6, Fall 2019)

Co-Instructor, EE5139R *Comm. Systems* at NUS (Fall 2012, Fall 2013)

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

Teaching Assistant, 6.241 *Dynamic Systems and Control at MIT*

Publications

A full list of publications is given in Appendix A, or the following websites:
https://vyftan.github.io/journal.html
https://vyftan.github.io/csconf.html

Professional Activities

Area Chair, *International Conference on Learning Representations* (ICLR) (2022–2023)

Senior Area Editor, *IEEE Transactions on Signal Processing* (2022–present)

Elected Member of the IEEE Information Theory Society Board of Governors (2021–present)

Technical Program Committee (TPC) Co-chair of the IEEE Information Theory Workshop, 2021

Lead Guest Editor, Special Issue on "Reinforcement and Online Learning" of the *IEEE Journal on Selected Areas in Information Theory* (2020–2021)

Assoc. Editor in Machine Learning and Statistics, *IEEE Transactions on Information Theory* (Feb 2020–present)

Assoc. Editor, *IEEE Transactions on Signal Processing* (2018–2022)

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* (2016–2019)

Assoc. Editor, *IEEE Transactions on Communications* (2015–2018)

Member of the IEEE Machine Learning & Signal Processing Tech. Comm. (2012–2015)

Technical Program Committee Member for the following conferences

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

Conference Organization

Co-organizing the "Information theory and data science" workshop in NUS (2023)

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/NUS Service

Chair of the University Midterm Advisory Report (MTAR) Committee for Science and Technology Disciplines (2020–present)

Member of the University Midterm Advisory Report (MTAR) Committee for Science and Technology Disciplines (2019–2020)

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

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

Graduate Students

Mr. CHENG Yuan (PhD expected in 2027)
Mr. BIAN Jie (PhD expected in 2026)
Mr. WANG Shuche (PhD expected in 2025)
Mr. CHEN Zhirui (PhD expected in 2025)
Mr. SHI Yujun (PhD expected in 2025)
Mr. ZHANG Fengzhuo (PhD expected in 2024)
Mr. YANG Junwen (PhD expected in 2024)

Mr. DU Jiawei (PhD graduated in 2023): Working as a Scientist in A*STAR
Ms. ZHAO Jingyi (PhD graduated in 2023): Working as a postdoc in Ecole Polytechnique de Montréal
Ms. PAN Jiachun (PhD graduated in 2023): Working as a postdoc in ECE, NUS
Mr. YAN Hanshu (PhD graduated in 2022): Working as a Research Scientist at Bytedance
Ms. HE Haiyun (PhD graduated in 2022): Working as a postdoc in Cornell University
Mr. ZHU Qiuyu (PhD graduated in 2022): Working as a Software Engineer at Tiktok
Ms. ZHONG Zixin (PhD graduated in 2021): Working as a postdoc in the University of Alberta
Mr. CAO Daming (Exchange student from Southeast University China): ?
Mr. Boyd ANDERSON (PhD graduated in 2019): Working as a lecturer in NUS
Mr. ZHOU Lin (PhD graduated in 2018): Working as an Associate Professor in Beihang University
Mr. TRUONG Vinh Lan (PhD graduated in 2018): Working as a Research Associate in Cambridge University
Mr. LIU Zhaoqiang (PhD graduated in 2017): Working as an Associate Professor in UESTC
Mr. LE Sy Quoc (PhD graduated in 2014): ?

Ms. Sandra TAN Shi Yun (M.Eng. graduated in 2020): Working as an Engineer in CSIT
Mr. ZHAO Renbo (M.Sc. graduated in 2018): Working as an Assistant Professor in University of Iowa

Vincent Y. F. Tan's Publications

Monographs

M1. Lei Yu† and **Vincent Y. F. Tan**, "Common Information, Noise Stability, and Their Extensions", *Foundations and Trends on Communications and Information Theory*, Vol. 19, No. 2, Pages 107 - 389, 2022

M2. **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. Recep Can Yavas† and **Vincent Y. F. Tan**, "Fixed-Budget Best Arm Identification in Sparse Linear Bandits", *Transactions on Machine Learning Research*, 2024+

J2. Masahito Hayashi and **Vincent Y. F. Tan**, "Corrections to "Equivocations, Exponents and Second-Order Coding Rates under Various Rényi Information Measures", *IEEE Transactions on Information Theory*, 2024+

J3. Zhirui Chen*, P. N. Karthik† , **Vincent Y. F. Tan**, and Yeow Meng Chee, "Federated Best Arm Identification with Heterogeneous Clients", *IEEE Transactions on Information Theory*, 2024+

J4. Yujun Shi*, Jian Liang, Wenqing Zhang, Chuhui Xue, **Vincent Y. F. Tan**, and Song Bai, "Understanding and Mitigating Dimensional Collapse in Federated Learning", *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2023+

J5. Zixin Zhong†, Wang Chi Cheung and **Vincent Y. F. Tan**, "Achieving the Pareto Frontier of Regret Minimization and Best Arm Identification in Multi-Armed Bandits", *Transactions on Machine Learning Research*, Sep 2023 (Featured Certification)

J6. Qiaosheng (Eric) Zhang† and **Vincent Y. F. Tan**, "Covert Communication with Mismatched Decoders", *IEEE Transactions on Information Theory*, Vol. 69, No. 7, Pages 4163 - 4177, Jul 2023

J7. Arnab Bhattacharyya, Sutanu Gayen, Eric Price, **Vincent Y. F. Tan**, and N. V. Vinodchandran (alphabetical), "Near-Optimal Learning of Tree-Structured Distributions by Chow–Liu", *SIAM Journal of Computing*, Vol. 52, Issue 3, Pages 761 - 793, 2023

J8. Yi Wei*, Zixin Zhong†, and **Vincent Y. F. Tan**, "Fast Beam Alignment via Pure Exploration in Multi-armed Bandits", *IEEE Transactions on Wireless Communications*, Vol. 69, No. 5, Pages 3264 - 3279, May 2023

J9. P. N. Karthik†, Kota Srinivas Reddy†, and **Vincent Y. F. Tan**, "Best-Arm Identification in Restless Markov Multi-Armed Bandits", *IEEE Transactions on Information Theory*, Vol. 69, No. 5, Pages 3240 - 3262, May 2023

J10. Yunlong Hou*, **Vincent Y. F. Tan**, and Zixin Zhong†, "Almost Optimal Variance-Constrained Best Arm Identification", *IEEE Transactions on Information Theory*, Vol. 69, No. 4, Pages 2603 - 2634, Apr 2023

J11. Fengzhuo Zhang*, Anshoo Tandon†, and **Vincent Y. F. Tan**, "Active-LATHE: An Active Learning Algorithm for Boosting the Error Exponent for Learning Homogeneous Ising Trees", *IEEE Transactions on Information Theory*, Vol. 69, No. 4, Pages 2537 - 2555, Apr 2023

J12. Qiaosheng (Eric) Zhang† and **Vincent Y. F. Tan**, "Exact Recovery in the General Hypergraph Stochastic Block Model", *IEEE Transactions on Information Theory*, Vol. 69, No. 1, Pages 453 - 471, Jan 2023

J13. Jiachun Pan*, Yonglong Li†, and **Vincent Y. F. Tan**, "Asymptotic Nash Equilibrium for the M-ary Sequential Adversarial Hypothesis Testing Game", *IEEE Transactions on Forensics and Security*, Vol. 18, Pages 831 - 845, Dec 2022

J14. Haiyun He*, Hanshu Yan*, and **Vincent Y. F. Tan**, "Information-Theoretic Characterization of the Generalization Error for Iterative Semi-Supervised Learning", *Journal of Machine Learning Research*, Vol. 23, No. 287, Pages 1 - 52, 2022

J15. Nicolas Gillis, Le Thi Khanh Hien†, Valentin Leplat and **Vincent Y. F. Tan**, "Distributionally Robust and Multi-Objective Nonnegative Matrix Factorization", *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 44, No. 8, Pages 4052 - 4064, Aug 2022

J16. Jiachun Pan*, Yonglong Li† and **Vincent Y. F. Tan**, "Asymptotics of Sequential Composite Hypothesis Testing under Probabilistic Constraints", *IEEE Transactions on Information Theory*, Vol. 68, No. 8, Pages 4998 - 5012, Aug 2022

J17. Qiaosheng (Eric) Zhang†, Geewon Suh, Changho Suh, **Vincent Y. F. Tan**, "MC2G: An Efficient Algorithm for Matrix Completion with Social and Item Similarity Graphs", *IEEE Transactions on Signal Processing*, Vol. 70, Pages 2681 - 2697, Jun 2022

J18. Yonglong Li†, **Vincent Y. F. Tan**, and Marco Tomamichel, "Optimal Adaptive Strategies for Sequential Quantum Hypothesis Testing", *Communications in Mathematical Physics*, Vol. 392, Issue 3, 993 - 1027, Jun 2022

J19. Yuta Sakai† and **Vincent Y. F. Tan**, "On Smooth Rényi Entropies: A Novel Information Measure, One-Shot Coding Theorems, and Asymptotic Expansions", *IEEE Transactions on Information Theory*, Vol. 68, No. 3, Pages 1496 - 1531, Mar 2022

J20. Zexin Wang†, **Vincent Y. F. Tan**, and Jonathan Scarlett, "Tight Regret Bounds for Noisy Optimization of a Brownian Motion", *IEEE Transactions on Signal Processing*, Vol. 70, Pages 1072 - 1087, Jan 2022

J21. Yuta Sakai†, Recep Can Yavas, and **Vincent Y. F. Tan**, "Third-Order Asymptotics of Variable-Length Compression Allowing Errors", *IEEE Transactions on Information Theory*, Vol. 67, No. 12, Pages 7708 - 7722, Dec 2021

J22. Zixin Zhong*, Wang Chi Cheung, and **Vincent Y. F. Tan**, "Thompson Sampling Algorithms for Cascading Bandits", *Journal of Machine Learning Research*, Vol. 22, No. 218, Pages 1 - 66, 2021

J23. Haiyun He*, Qiaosheng (Eric) Zhang†, and **Vincent Y. F. Tan**, "Optimal Change-Point Detection with Training Sequences in the Large and Moderate Deviations Regimes", *IEEE Transactions on Information Theory*, Vol. 67, No. 10, Pages 6758 - 6784, Oct 2021

J24. Sadaf Salehkalaibar, Mohammad Hossein Yassaee, **Vincent Y. F. Tan**, Mehrasa Ahmadipour "State Masking over a Two-State Compound Channel", *IEEE Transactions on Information Theory*, Vol. 67, No. 9, Pages 5651 - 5673, Sep 2021

J25. Qiaosheng Zhang† and **Vincent Y. F. Tan** "Covert Identification over Binary-Input Memoryless Channels", *IEEE Transactions on Information Theory*, Vol. 67, No. 8, Pages 5387 - 5403, Aug 2021

J26. Sandra S. Y. Tan*, Antonios Varvitsiotis†, and **Vincent Y. F. Tan**, "Analysis of Optimization Algorithms via Sum-of-Squares", *Journal of Optimization Theory and Applications*, Vol. 190, Pages 56 - 81, Jul 2021

J27. Dana Lahat, Yanbin Lang*, **Vincent Y. F. Tan**, and Cédric Févotte, "Positive Semidefinite Matrix Factorization: A Connection with Phase Retrieval and Affine Rank Minimization", *IEEE Transactions on Signal Processing*, Vol. 69, Pages 3059 - 3074, Apr 2021

J28. Ting Cai†, **Vincent Y. F. Tan**, and Cd́ric Fv́otte, "Adversarially-Trained Nonnegative Matrix Factorization", *IEEE Signal Processing Letters*, Vol. 28, Pages 1415 - 1419, Jun 2021

J29. Mahdi Haghifam, **Vincent Y. F. Tan**, and Ashish Khisti "Sequential Classification with Empirically Observed Statistics", *IEEE Transactions on Information Theory*, Vol. 67, No. 5, Pages 3095–3113, May 2021

J30. Yonglong Li† and **Vincent Y. F. Tan**, "On the Capacity of Channels with Deletions and States", *IEEE Transactions on Information Theory*, Vol. 67, No. 5, Pages 2663–2679, May 2021

J31. Lei Yu† and **Vincent Y. F. Tan**, "On Non-Interactive Simulation of Binary Random Variables", *IEEE Transactions on Information Theory*, Vol. 67, No. 5, Pages 2528–2538, Apr 2021

J32. Qiaosheng Zhang† , **Vincent Y. F. Tan**, and Changho Suh, "Community Detection and Matrix Completion with Social and Item Similarity Graphs", *IEEE Transactions on Signal Processing*, Vol. 69, No. 12, Pages 917–931, Jan 2021

J33. Kang-Hee Cho, Si-Hyeon Lee and **Vincent Y. F. Tan**, "Throughput Scaling of Covert Communication over Wireless Adhoc Networks", *IEEE Transactions on Information Theory*, Vol. 66, No. 12, Pages 7684–7701, Dec 2020

J34. Anshoo Tandon[†], **Vincent Y. F. Tan**, Lav R. Varshney "The Bee-Identification Error Exponent with Absentee Bee", *IEEE Transactions on Information Theory*, Vol. 66, No. 12, Pages 7602–7614, Dec 2020

J35. Yuta Sakai[†] and **Vincent Y. F. Tan**, "Variable-Length Source Dispersions Differ Under Maximum and Average Criteria", *IEEE Transactions on Information Theory*, Vol. 66, No. 12, Pages 7565–7587, Dec 2020

J36. Anshoo Tandon[†], **Vincent Y. F. Tan**, Shiyao Zhu[*] "Exact Asymptotics for Learning Tree-Structured Graphical Models: Noiseless and Noisy Samples", *IEEE Journal on Selected Areas in Information Theory*, Vol. 1, No. 3, Pages 760–776, Nov 2020

J37. Yonglong Li[†] and **Vincent Y. F. Tan**, "Second-Order Asymptotics of Sequential Hypothesis Testing", *IEEE Transactions on Information Theory*, Vol. 66, No. 11, Pages 7222–7230, Nov 2020

J38. Yuta Sakai[†], **Vincent Y. F. Tan**, and Mladen Kovačević[†], "Second- and Third-Order Asymptotics of the Continuous-Time Poisson Channel", *IEEE Transactions on Information Theory*, Vol. 66, No. 8, Pages 4742–4760, Aug 2020

J39. Haiyun He[*], Lin Zhou[†], and **Vincent Y. F. Tan**, "Distributed Detection with Empirically Observed Statistics", *IEEE Transactions on Information Theory*, Vol. 66, No. 7, Pages 4349–4367, Jul 2020

J40. Lei Yu[†] and **Vincent Y. F. Tan**, "Corrections to "Wyner's Common Information under Rényi Divergence Measures" ", *IEEE Transactions on Information Theory*, Vol. 66, No. 4, Pages 2599–2608, Apr 2020

J41. Lei Yu[†] and **Vincent Y. F. Tan**, "On Exact and ∞-Rényi Common Informations", *IEEE Transactions on Information Theory*, Vol. 66, No. 6, Pages 3366–3406, Jun 2020

J42. Lei Yu[†] and **Vincent Y. F. Tan**, "Exact Channel Synthesis", *IEEE Transactions on Information Theory*, Vol. 66, No. 5, Pages 2299–2818, May 2020

J43. Lin Zhou[*], **Vincent Y. F. Tan**, and Mehul Motani, "Second-Order Asymptotically Optimal Statistical Classification", *Information and Inference: A Journal of the IMA*, Vol. 9, Issue 1, Pages 81–111, Mar 2020

J44. Daming Cao[*] and **Vincent Y. F. Tan**, "Exact Error and Erasure Exponents for the Asymmetric Broadcast Channel", *IEEE Transactions on Information Theory*, Vol. 66, No. 2, Pages 865 – 885, Feb 2020

J45. Daming Cao[*], Lin Zhou[*], and **Vincent Y. F. Tan**, "Strong Converse for Hypothesis Testing Against Independence over a Two-Hop Network", *Entropy*, Vol. 21, No. 12, Article 1171, Nov 2019 (Special Issue on Multiuser Information Theory II)

J46. Anshoo Tandon[†], **Vincent Y. F. Tan**, and Lav R. Varshney, "The Bee-Identification Problem: Bounds on the Error Exponent"", *IEEE Transactions on Communications*, Vol. 67, No. 11, Pages 7405 – 7416, Nov 2019

J47. Zhaoqiang Liu[*] and **Vincent Y. F. Tan**, "The Informativeness of k-means for Learning Mixture Models", *IEEE Transactions on Information Theory*, Vol. 65, No. 11, Pages 7460 – 7479, Nov 2019

J48. Ting-Yi Wu, Lav R. Varshney, and **Vincent Y. F. Tan**, "On the Throughput of Channels that Wear Out", *IEEE Transactions on Communications*, Vol. 67, No. 8, Pages 5311 – 5320, Aug 2019

J49. Lan V. Truong[*] and **Vincent Y. F. Tan**, "The Reliability Function of Lossy Source-Channel Coding of Variable-Length Codes with Feedback", *IEEE Transactions on Information Theory*, Vol. 65, No. 8, Pages 5028 – 5042, Aug 2019

J50. Lan V. Truong[*] and **Vincent Y. F. Tan**, "Moderate Deviation Asymptotics for Variable-Length Codes with Feedback", *IEEE Transactions on Information Theory*, Vol. 65, No. 7, Pages 4364 – 4386, Jul 2019

J51. 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, Mar 2019

J52. 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. 6, Pages 3349 – 3383, Jun 2019

J53. Mladen Kovačević†, Carol Wang†, and **Vincent Y. F. Tan**, "Error-Free Communication over State-Dependent Channels with Variable-Length Feedback", *IEEE Transactions on Communication*, Vol. 67, No. 5, Pages 3182 – 3191, May 2019

J54. Atefeh Gilani, Selma Belhadj Amor†, Sadaf Salehkalaibar and **Vincent Y. F. Tan**, "Distributed Hypothesis Testing with Privacy Constraints", *Entropy*, Vol. 21, No. 5, Article 478, May 2019

J55. **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, No. 5, Pages 1377 – 1389, May 2019

J56. 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. 5, Pages 3145 – 3159, May 2019

J57. 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. 4, Pages 2234 – 2251, Apr 2019

J58. 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, Pages 1862 – 1897, Mar 2019

J59. Lei Yu† and **Vincent Y. F. Tan**, "Asymptotic Coupling and Its Applications in Information Theory", *IEEE Transactions on Information Theory*, Vol. 65, Vol. 65, No. 3, Pages 1321 – 1344, Mar 2019

J60. Silas L. Fong* and **Vincent Y. F. Tan**, "Strong Converse for Multimessage Networks with Tight Cut-Set Bounds", *Problems of Information Transmission (Problemy Peredachi Informatsii)*, Vol. 55, No. 1, Pages 67 – 100, Jan 2019

J61. 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

J62. 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

J63. 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

J64. 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

J65. 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

J66. **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

J67. 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

J68. 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

J69. 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

J70. 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

J71. 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

J72. 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

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Highly-Selective Computer Science Conference Papers

C1. Zhirui Chen[*], P. N. Karthik[†], Yeow Meng Chee, and **Vincent Y. F. Tan**, "Fixed-Budget Differentially Private Best Arm Identification", Proc. of the 12th International Conference on Learning Representations (ICLR), Vienna, Austria, May 2024 (AR $\approx$ 31%)

C2. Ruiquan Huang, Yuan Cheng[*], Jing Yang, **Vincent Y. F. Tan**, Yingbin Liang, "Provable Benefits of Multi-task RL under Non-Markovian Decision Making Processes", Proc. of the 12th International Conference on Learning Representations (ICLR), Vienna, Austria, May 2024 (AR $\approx$ 31%)

C3. Jiachun Pan[†], Hanshu Yan, Jun Hao Liew, **Vincent Y. F. Tan**, and Jiashi Feng, "Adjoint-DPM: Adjoint Sensitivity Method for Gradient Backpropagation of Diffusion Probabilistic Models", Proc. of the 12th International Conference on Learning Representations (ICLR), Vienna, Austria, May 2024 (AR $\approx$ 31%)

C4. Fengzhuo Zhang[*], **Vincent Y. F. Tan**, Zhuoran Yang, and Zhaoran Wang, "Learning Regularized Monotone Graphon Mean-Field Games", Proc. of the 37th Annual Conference on Neural Information Processing Systems (NeurIPS), New Orleans, USA, Dec 2023 (AR $\approx$ 26.1%)

C5. Xiaochen Zhu[*], **Vincent Y. F. Tan**, and Xiaokui Xiao, "BLINK: Link Local Differential Privacy for Graph Neural Networks via Bayesian Estimation", Proc. of the ACM Conference on Computer and Communications Security (CCS), Copenhagen, Denmark, Nov 2023 (AR $\approx$ 19.15%)

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C9. Yujun Shi[*], Jian Liang, Wenqing Zhang, **Vincent Y. F. Tan**, and Song Bai, "Towards Understanding and Mitigating Dimensional Collapse in Heterogeneous Federated Learning", Proc. of the 11th International Conference on Learning Representations (ICLR), Kigali, Rwanda, May 2023 (AR $\approx$ 31.8%)

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C11. Kota Srinivas Reddy[†], P. N. Karthik[†], and **Vincent Y. F. Tan**, "Almost Cost-Free Communication in Federated Best Arm Identification", Proc. of the 37th AAAI Conference on Artificial Intelligence (AAAI), Washington DC, USA, Feb 2023 (AR: 1721/8777 $\approx$ 19.6%)

C12. Fengzhuo Zhang*, Boyi Liu, Kaixin Wang, **Vincent Y. F. Tan**, Zhuoran Yang, and Zhaoran Wang, "Relational Reasoning via Set Transformers: Provable Efficiency and Applications to MARL", Proc. of the 36th Annual Conference on Neural Information Processing Systems (NeurIPS), New Orleans, USA, Dec 2022 (AR $\approx$ 25.6%)

C13. Junwen Yang* and **Vincent Y. F. Tan**, "Minimax Optimal Fixed-Budget Best Arm Identification in Linear Bandits", Proc. of the 36th Annual Conference on Neural Information Processing Systems (NeurIPS), New Orleans, USA, Dec 2022 (AR $\approx$ 25.6%)

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C24. Qiuyu Zhu* and **Vincent Y. F. Tan**, "Thompson Sampling Algorithms for Mean-Variance Bandits", *Proc. of the 37th International Conference on Machine Learning (ICML)*, Vienna, Austria, Jul 2020 (AR: 1088/4990 $\approx$ 21.8%)

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