

**Nghi H. Tran**

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Contact  
Information

Department of Electrical & Computer Engineering

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Lead Guest Editor, Elsevier PHYCOM, Special Issue on "*Heterogeneous Vehicular Networks: Physical Layer Technologies and Designs*" (2018)

Lead Guest Editor, EURASIP Journal on Wireless Communications and Networking, Special Issue on "*Full-Duplex Radio: Theory, Design, and Applications*" (2016)

#### **Committee Chair**

Publicity Chair, IEEE ICC 2020, Sixth Workshop on Full-Duplex Communications for Future Wireless Networks

Tutorial Chair, International Conference on Telecommunications (ICT) 2019

Publicity Chair, IEEE ICC 2019, Fifth Workshop on Full-Duplex Communications for Future Wireless Networks

Publicity Chair, IEEE Globecom 2018, Forth Workshop on Full-Duplex Communications for Future Wireless Networks

IEEE Communications Letters Editor Award, December 2017

Best Student Paper Award of the IEEE SigTelCom, Da Nang, Vietnam, January 2017

Best Student Paper Award of the IEEE ICCE, Ha Long, Vietnam, July 2016

Best Paper Award of the IEEE ComManTel, Da Nang, Vietnam, December 2015

Best Paper Award Runner-up of the IEEE Canadian Workshop on Information Theory (CWIT), St. John, NL, Canada, July 2015

IEEE Senior Member, since February 2015

NSERC Doctoral Prize Nomination, July 2008

NSERC Postdoctoral Fellowship, May 2008

University of Saskatchewan Graduate Thesis Award in the Physical and Engineering Sciences

## Research Grants

### Funded Projects

1. *FA9453-23-1-0002: Theoretical Limits and Coding for Ultra-Reliable, Low Latency, and Secure GNSS in Urban Fading Environments*, Air Force Research Lab (AFRL), **N. H. Tran; Total: \$140,000**; Akron's share: \$140,000; Performance period: 02/2023-05/2025.
2. *Interference-Aware Spectrum Utilization for Coexistence of Passive and Active Wireless Systems*, Faculty Research Grant, University of Akron, **N. H. Tran; Total: \$10,000**; Performance period: 05/2022-04/2023.
3. *REU Supplement: SaTC: CORE: Small: A Practical Approach to Study Security in Wireless Networks*, NSF-SaTC, **N. H. Tran; Total: \$16,000**; Performance period: 2022.
4. *Smart On-Board Satellite AGC Loop with Anti-Jamming Capability for Spread Spectrum Frequency Hopping System { Phase II*, Air Force Research Lab

from Washington State University Vancouver); **Total: \$359,765**; Akron's share: \$200,396; Performance period: 07/2015-06/2019.

11. *BAA-15-002: Embedded Systems Security*, Office of Naval Research (ONR), **N. H. Tran** and A. Madanayake (in collaboration with S. Shetty and C. Fan from Tennessee State University); **Total: \$600,000**; Akron's share: \$360,000; Performance period: 10/2015-09/2018.
12. *REU Supplement: Collaborative Research: Full-Duplex Cognitive Radio: Theory and Hardware*, NSF-Electrical, Communications and Cyber Systems, **N. H. Tran**; **Total: \$8,000**; Performance period: 2016.
13. *Communication Systems Under Impulsive Interference: Theory and Design*, Faculty Research Grant, University of Akron, **N. H. Tran**; **Total: \$10,000**; Performance period: 2014-2015.
14. *Information-theoretic and Physical-layer Security Treatments for Wireless Relay Networks*, Firestone Research, University of Akron, **N. H. perio**



Abdelrhman Mahamadi (Prof. Sastry, University of Akron) - Ph.D., August 2016 - *Bond Graphs Models for Human Behavior*

Ardalan Alizadeh (Dr. Bahrami, University of Akron) - Ph.D., July 2016 - *Cognitive Communications in the Presence of Emerging Wireless Technologies*

Mehdi Pirbazari (Dr. Bahrami, University of Akron) - Ph.D., May 2015 - *Space Modulation: Signal Design and Performance Evaluation*

Nilanka Rajapaksha (Dr. Madanayake, University of Akron) - Ph.D., November 2014 - *Wave-digital Filter Based Circuits for Beamforming and RF-FPGAs*

Mohammed Eltayeb (Dr. Bahrami, University of Akron) - Ph.D., Oct. 2014 - *Opportunistic Scheduling with Limited Feedback in Wireless Communications Networks*

Chamith Wijenayake (Dr. Madanayake, University of Akron) - Ph.D., August 2014 - *Multi-dimensional Signal Processing And Circuits For Advanced Electronically Scanned Antenna Arrays*

#### **M.Sc. Thesis Committee Member**

Andrew Cihon-Scott (Prof. Sozer, University of Akron) - M.Sc., 2023 (expected)

Nick Seifert (Prof. Carletta, University of Akron) - M.Sc., 2022 (expected)

John Vorhies (Dr. Lee, University of Akron) - M.Sc., May 2020 - *Low-complexity Algorithms for Light Field Image Processing*

Abdelrhman Mahamadi (Dr. Sastry, University of Akron) - M.Sc., November 2014

Dharma Teja Akkineni (Dr. Hariharan, University of Akron) - M.Sc., November 2014 - *A Fourier Spectral Method to Solve Linear and Non-Linear Differential Equations and Its Applications*

Stephen McCarthy (Dr. Ida, University of Akron) - M.Sc., October 2014 - *Investigation of Power Reduction Methods for Multi-User MIMO WLAN Applications*

Arindam Sengupta (Dr. Madanayake, University of Akron) - M.Sc., August 2014 - *Multi-dimensional Signal Processing Using Mixed-Microwave-Digital Circuits and Systems*

Randeel Wimalagunaratne (Dr. Madanayake, University of Akron) - M.Sc., August 2013

Suman Shrestha (Dr. Giakos, University of Akron) - M.Sc., May 2013 - *High Resolution Polarimetric Imaging Techniques for Space and Medical Applications*

Mehdi Sadeghzadeh (Dr. Bahrami, University of Akron) - M.Sc., March 2013 - *Linear Precoding for Downlink Network MIMO Systems*

## Courses Taught Undergraduate

Year	Semester	Course
2012-To date	Spring	Computer Networks
2012-To date	Fall	Signals & Systems
2013	Spring	Digital Logic Design Lab

## Graduate

Year	Semester	Course
2021-To date	Fall	Stochastic Processes
2021-To date	Spring	Optimization for Machine Learning
2020-To date	Spring	Multi-User Communications
2011-To date	Fall	Information Theory
2014-To date		







- Constrained Capacities of Bernoulli-Gaussian Impulsive Noise Channels in Rayleigh Fading", *IEEE Trans. Commun.*, vol. 62, pp. 1845-1856, June 2014.
32. L. Wang, M. ElKashlan, J. Huang, **N. H. Tran**, and T. Q. Duong, "Secure Transmission with Optimal Power Allocation in Untrusted Relay Networks", *IEEE Wireless Commun. Letters*, vol. 3, pp. 289-292, June 2014.
  31. T. X. Tran, **N. H. Tran**, H. R. Bahrami, and S. Sastry, "On Achievable Rate and Ergodic Capacity of NAF Multi-Relay Networks with CSI", *IEEE Trans. Commun.*, vol. 62, pp. 1490-1502, May 2014.
  30. L. J. Rodriguez, **N. H. Tran**, and T. Le-Ngoc, "Achievable Rate and Power Allocation for Single-Relay AF Systems over Rayleigh Fading Channels at High and Low SNRs", *IEEE Trans. Veh. Tech.*, vol. 63, pp. 1726-1739, May 2014.
  29. L. J. Rodriguez, **N. H. Tran**, and T. Le-Ngoc, "Optimal Power Allocation and Capacity of Full-Duplex AF Relaying under Residual Self-Interference", *IEEE Wireless Commun. Letters*, vol. 3, pp. 233-236, April 2014.
  28. L. J. Rodriguez, **N. H. Tran**, and T. Le-Ngoc, "On the Capacity of the Static Half-Duplex Non-orthogonal AF Relay Channel", *IEEE Trans. Wireless Commun.*, vol. 13, pp. 1034-1046, Feb. 2014.
  27. M. Maleki, H. R. Bahrami, Ardalan Alizadeh, and **N. H. Tran**, "On the Performance of Spatial Modulation: Optimal Constellation Breakdown", *IEEE Trans. Commun.*, vol. 62, pp. 144-157, Jan. 2014.
  26. L. J. Rodriguez, **N. H. Tran**, A. Helmy, and Tho Le-Ngoc, "Optimal Power Adaption for Cooperative AF Relaying with Channel Side Information", *IEEE Trans. Veh. Tech.*, vol. 62, pp. 3164-3174, Sept. 2013.
  25. **N. H. Tran**, L. J. Rodriguez, Tho Le-Ngoc, and H. R. Bahrami, "Precoding and Symbol Grouping for NAF Relaying in BICM systems", *IEEE Trans. Veh. Tech.*, vol. 62, pp. 2607-2617, Jul. 2013.
  24. M. Maleki, H. R. Bahrami, S. Beygi, M. Kafashan, and **N. H. Tran**, "Space Modulation with CSI: Constellation Design and Performance Evaluation", *IEEE Trans. Veh. Tech.*, vol. 62, pp. 1623-1634, May 2013.
  23. S. Herath, **N. H. Tran**, and Tho Le-Ngoc, "Rotated Multi-D Constellations in Rayleigh Fading: Mutual Information Improvement and Pragmatic Approach for Near-Capacity Performance in High-Rate Regions", *IEEE Trans. Commun.*, vol. 60, pp. 3694-3704, Dec. 2012.
  22. L. J. Rodriguez, **N. H. Tran**, and Tho Le-Ngoc, "Multiple-Frame Precoding for NAF Relaying over Rayleigh Fading Channels", *IEEE Trans. Veh. Tech.*, vol. 61, pp. 398-404, January 2012.
  21. L. J. Rodriguez, **N. H. Tran**, and Tho Le-Ngoc, "Multiple-Frame Precoding and Multi-D Mapping for BICM over Ergodic NAF Relay Channels", *Wiley Journal in Wireless Commun. and Mobile Computing*, vol. 11, pp. 1564-1575, December 2011.
  20. Hung Nguyen-Le, Tho Le-Ngoc, and **N. H. Tran**, "Iterative Receiver Design with Joint Doubly Selective Channel and CFO Estimation for Coded MIMO-OFDM Transmissions", *IEEE Trans. Veh. Tech.*, vol. 60, pp. 4052-4057, October 2011.
  19. L. J. Rodriguez, **N. H. Tran**, and Tho Le-Ngoc, "Bandwidth-efficient Bit-interleaved Coded Modulation over NAF Relay Channels: Error Performance and Precoder Design" *IEEE Trans. Veh. Tech.*, vol. 60, pp. 2086-2101, June 2011.
  18. L. J. Rodriguez, **N. H. Tran**, and Tho Le-Ngoc, "Jointly Optimal Precoder and Power Allocation for an Amplify-and-Forward Half-Duplex Relay System", *REV Journal on Electronics and yleigh*

*IEEE Trans. Wireless Commun.*, vol. 56, pp. 4818-4824, December 2008.

13. **N. H. Tran**, Ha H. Nguyen, and Tho Le-Ngoc, \BICM-ID with Signal Space Diversity



- in *Proc. IEEE VTC*, Sydney, Australia, June 2017, pp. 1-6.
68. M. Ranjbar, N. Raymondi, **N. H. Tran**, and, T. Karacolak, "Energy Efficiency of Full Duplex Cognitive Radio under Imperfect Spectrum Sensing", in *Proc. IEEE COMSNET-Graduate Forum*, Bangalore, India, January 2017, pp. 1-2.
  67. N. Raymondi, M. Seredich, T. Karacolak, **N. H. Tran**, and D. H. N. Nguyen, "Compact and Power-Efficient 5 GHz Full-Duplex Design Utilizing the 180° Ring Hybrid Coupler", in *Proc. IEEE SigTelCom*, Da Nang, Vietnam, January 2017, pp. 1-5 (**Best Student Paper Award**).
  66. D. A. Le, H. V. Vu, **N. H. Tran**, M. C. Gursoy, and T. Le-Ngoc, "Numerical Calculation of Information Rates and Capacity of Quadrature Gaussian Mixture Channels", in *Proc. IEEE Int. Conf. Commun. Electron. (ICCE)*, Ha Long, Vietnam, July 2016, pp. 1-6 (**Best Student Paper Award**).
  65. G. Makar, S. Seran, **N. H. Tran**, and T. Karacolak, "Differential-Fed Patch Antenna with Ring Hybrid Feeding Structure for Simultaneous Transmit and Receive (STAR) Systems", in *Proc. IEEE International Symposium on Antennas and Propagation/USNC-URSI National Radio Science*, Puerto Rico, USA, June 2016, pp. 1.
  64. M. Ranjbar, **N. H. Tran**, M. C. Gursoy, and H. R. Bahrami, "Energy Efficiency of Channels under Additive Gaussian-Mixture Noise in the Low-Power Regime", in *Proc. IEEE Int. Conf. on Commun. (ICC) - Green Communications Systems and Networks (GCSN)*, Kuala Lumpur, Malaysia, May 2016, pp. 1-6.
  63. D. A. Le, H. V. Vu, **N. H. Tran**

51. D. A. Le, H. V. Vu, **N. H. Tran**, T. Q. Duong, and D. T. Ngo, "Numerical Calculation of Achievable Rates for Cognitive Radio with Dynamic Frequency Hopping Under Imperfect Spectrum Sensing", in *Proc. IEEE Int. Conf. Commun. Electron. (ICCE)*, Da Nang, Vietnam, August 2014.
50. L. J. Rodriguez, **N. H. Tran**, and T. Le-Ngoc, "Optimal Power Allocation Schemes for Single-Relay AF Wire-Tap Channels", in

*IEEE Workshop on Emerging COgnitive Radio Applications and aLgorithms (CORAL)*, San Francisco, CA, USA, Jul. 2012.

32. S. Herath, **N. H. Tran**, and Tho Le-Ngoc, "On Optimal Input Distribution and Capacity Limit of Bernoulli-Gaussian Impulsive Noise Channels", in *Proc. IEEE Int. Conf. on Commun. (ICC) - SAC - Powerline Communications*, Ottawa, Canada, June 2012.
31. L. J. Rodriguez, **N. H. Tran**, and Tho Le-Ngoc, "Capacity Limit of Static Single-Relay Amplify-and-Forward Channels", in *Proc. IEEE Int. Conf. on Commun. (ICC) - Communications Theory*, Ottawa, Canada, June 2012.

14. **N. H. Tran**, Ha H. Nguyen, and Tho Le-Ngoc, "On Symbol and Bit Error Probabilities of Orthogonal Space-Time Block Codes with Antenna Selection over Keyhole Fading Channels" in *Proc. IEEE Int. Conf. on Commun.*, Beijing, China, May 2008.
13. **N. H. Tran**, Ha H. Nguyen, and Tho Le-Ngoc, "BICM-ID with Signal Space Diversity for Keyhole Nakagami- $m$  Fading Channels" in *Proc. IEEE Int. Symposium on Inform. Theory (ISIT)*, Nice, France, June 2007.
12. **N. H. Tran**, Ha H. Nguyen, and Tho Le-Ngoc, "Application of Signal Space Diversity in



3. **Dr. Tolga M. Duman**

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4. **Dr. Ekram Hossain**

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