

Dennis Ogbe

Education

May 2020	Ph.D., Purdue University <i>Dissertation title: Adaptive Beamforming and Coding for Multi-node Wireless Networks</i>
May 2014	B.S.E.E., Tennessee Technological University

Professional Experience

Oct. 2025–present	Software Engineer Northwood, Torrance, CA
Mar. 2021–Oct. 2025	Signal Analysis Engineer NASA Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA
Nov. 2020–Mar. 2021	Telecom Software and Software-defined Radio Engineer Lynk, Falls Church, VA
Jun. 2020–Nov. 2020	Postdoctoral Associate Virginia Tech, Bradley Department of Electrical and Computer Engineering, Arlington, VA
Aug. 2015–May 2020	Graduate Research Assistant Purdue University, Elmore Family School of Electrical and Computer Engineering, West Lafayette, IN
May 2016–Aug. 2016	R&D Summer Trainee Nokia Bell Labs, Small Cell Research Group, Arlington Heights, IL
Aug. 2014–May 2015	Graduate Teaching Assistant Purdue University, Elmore Family School of Electrical and Computer Engineering, West Lafayette, IN

Teaching Experience

University Courses

2014–2015	Advanced C Programming (Purdue University, Teaching Assistant)
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Workshops

2018	Intro to <code>git</code> (Purdue University, Instructor)
2016–2020	Intro to \LaTeX (Purdue University, Instructor)
2014–2016	Intro to C, C++ debugging (Purdue University, Instructor)

Publications and Scholarly Work

Conference Talks and Proceedings

16. A. de Senneville, **D. Ogbe**, and Z. Towfic, “Machine learning for interference detection and mitigation on space telecom software-defined radio signals,” in *Proceedings of the Small Satellite Conference, Advanced Technologies, SSC25-RAI-07*, Jul. 2025. DOI: 10.26077/bb95-893b.
15. **D. Ogbe**, A. Jongeling, Z. Towfic, S. Janamian, D. Foor, B. Wiley, D. Cho, E. Grigorian, G. Miles, C. Okino, T. Canham, D. Sheldon, and J. Sauvageau, “The JPL Snapdragon Co-Processor: A compact high-performance computer for spaceflight applications,” in *2025 IEEE Aerospace Conference (AERO)*, Mar. 2025, pp. 1–12. DOI: 10.1109/AERO63441.2025.11068431.
14. N. Tyagi, L. White, **D. Ogbe**, and Z. Towfic, “Implementation of regenerative ranging for low SNR scenarios for software-defined-radios,” in *2025 IEEE Aerospace Conference (AERO)*, Mar. 2025, pp. 1–11. DOI: 10.1109/AERO63441.2025.11068467.
13. M. Bhateja, **D. Ogbe**, and Z. Towfic, “Anomaly detection for spacecraft radios based on open-loop recording data,” in *2024 IEEE Aerospace Conference (AERO)*, Mar. 2024, pp. 1–9. DOI: 10.1109/AERO58975.2024.10521293.

12. **D. Ogbe**, B. Wallace, M. Shihabi, and S. Palo, "Two-way ranging using OFDM waveform with application to lunar surface navigation," in *2024 IEEE Aerospace Conference (AERO)*, Mar. 2024, pp. 1–10. DOI: 10.1109/AERO58975.2024.10521238.
11. M. M. Kobayashi, Z. Towfic, C. Spurgers, M. Kilzer, S. Haque, M. Ciminera, J. Gayle, I. Botvinnik, J. Steinert, S. Holmes, **D. Ogbe**, J. Miller, S. Rahimizadeh, D. Hawkins, A. Jongeling, M. Pugh, and I. Kuperman, "UST-Lite direct waveform sampling software-defined radio for spaceflight applications," in *2023 IEEE Aerospace Conference (AERO)*, Mar. 2023, pp. 1–18. DOI: 10.1109/AERO55745.2023.10115551.
10. **D. Ogbe** and M. I. Ferguson, "Passive positioning, navigation, and timing (PPNT) in cislunar space using earth-based transmitters," in *2023 IEEE Aerospace Conference (AERO)*, **Track 04 Best Paper Award**, Mar. 2023, pp. 1–9. DOI: 10.1109/AERO55745.2023.10115811.
9. B. Wallace, S. Palo, P. Axelrad, J. Marino, N. Rainville, R. Kingsbury, J. DiTomas, M. Shihabi, and **D. Ogbe**, "Development of a lunar surface navigation pseudolite testbed," in *Proceedings of the 36th International Technical Meeting of the Satellite Division of The Institute of Navigation (ION GNSS+ 2023)*, Sep. 2023, pp. 3612–3630. DOI: 10.33012/2023.19275.
8. Z. Towfic, **D. Ogbe**, J. Sauvageau, D. Sheldon, A. Jongeling, S. Chien, F. Mirza, E. Dunkel, J. Swope, M. Ogut, V. Cretu, and C. Pagnotta, "Benchmarking and testing of Qualcomm Snapdragon system-on-chip for JPL space applications and missions," in *2022 IEEE Aerospace Conference (AERO)*, Mar. 2022, pp. 1–12. DOI: 10.1109/AERO53065.2022.9843518.
7. G. Naik, **D. Ogbe**, and J.-M. Park, "Can Wi-Fi 7 support real-time applications? On the impact of multi link aggregation on latency," in *ICC 2021 - IEEE International Conference on Communications*, Jun. 2021. DOI: 10.1109/ICC42927.2021.9500256.
6. **D. Ogbe**, C.-C. Wang, and D. J. Love, "Backhauling many devices: Relay schemes for massive random access networks," in *GLOBECOM 2020 - 2020 IEEE Global Communications Conference*, Dec. 2020. DOI: 10.1109/GLOBECOM42002.2020.9322431.
5. —, "On the optimal delay amplification factor of multi-hop relay channels," in *2019 IEEE International Symposium on Information Theory (ISIT)*, Jul. 2019. DOI: 10.1109/ISIT.2019.8849611.
4. **D. Ogbe**, V. Raghavan, and D. J. Love, "Characterizing and adapting to the structure of millimeter wave channel covariance matrices," in *2018 52nd Asilomar Conference on Signals, Systems, and Computers*, Oct. 2018, pp. 567–571. DOI: 10.1109/ACSSC.2018.8645188.
3. **D. Ogbe**, D. J. Love, and V. Raghavan, "Iterative beam alignment algorithms for TDD MIMO systems," in *2017 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Mar. 2017, pp. 3469–3473. DOI: 10.1109/ICASSP.2017.7952801.
2. C.-C. Wang, D. J. Love, and **D. Ogbe**, "Transcoding: A new strategy for relay channels," in *55th Annual Allerton Conference on Communication, Control and Computing*, Oct. 2017. DOI: 10.1109/ALLERTON.2017.8262772.
1. S. Goguri, **D. Ogbe**, R. Mudumbai, D. Love, S. Dasgupta, and P. Bidigare, "Maximizing wireless power transfer using distributed beamforming," in *2016 50th Asilomar Conference on Signals, Systems and Computers*, Nov. 2016, pp. 1775–1779. DOI: 10.1109/ACSSC.2016.7869688.

Serial Journal Articles

7. B. T. Wallace, S. Palo, P. Axelrad, J. Marino, N. Rainville, J. DiTomas, R. Kingsbury, M. Shihabi, and **D. Ogbe**, "A lunar surface pseudolite architecture for regional communication and radionavigation," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 61, no. 3, pp. 5611–5634, 2025. DOI: 10.1109/TAES.2024.3520536.
6. Y. Bar-Sever, E. Burt, K. Cheung, T. Ely, J. Hamkins, S. Lichten, M. Sanchez Net, **D. Ogbe**, R. Tjoelker, Z. Towfic, and N. Yu, "Architectures and technology investment priorities for positioning, navigation, and timing at the Moon and Mars," *The Interplanetary Network Progress Report*, vol. 42-237, pp. 1–60, May 2024. [Online]. Available: https://ipnpr.jpl.nasa.gov/progress_report/42-237/42-237A.pdf.
5. **D. Ogbe**, C.-C. Wang, and D. J. Love, "On the optimal delay growth rate of multi-hop line networks: Asymptotically delay-optimal designs and the corresponding error exponents," *IEEE Transactions on Information Theory*, vol. 69, no. 10, pp. 6167–6193, 2023. DOI: 10.1109/TIT.2023.3283802.
4. M. Zhang, J. Song, D. J. Love, **D. Ogbe**, A. Ghosh, and B. Peleato, "Increasing throughput in wireless communications by grouping similar quality bits," *IEEE Communications Letters*, vol. 24, no. 11, pp. 2450–2453, Jul. 2020. DOI: 10.1109/LCOMM.2020.3008716.

3. **D. Ogbe**, D. J. Love, M. Rebholz, and T. P. Bidigare, "Efficient channel estimation for aerial wireless communications," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 55, no. 6, pp. 2774–2785, Dec. 2019. DOI: 10.1109/TAES.2019.2894892.
2. S. Goguri, **D. Ogbe**, S. Dasgupta, R. Mudumbai, D. R. Brown, D. J. Love, and U. Madhow, "Optimal precoder design for distributed transmit beamforming over frequency-selective channels," *IEEE Transactions on Wireless Communications*, vol. 17, no. 11, pp. 7759–7773, Nov. 2018. DOI: 10.1109/TWC.2018.2870649.
1. **D. Ogbe**, D. J. Love, and V. Raghavan, "Noisy beam alignment techniques for reciprocal MIMO channels," *IEEE Transactions on Signal Processing*, vol. 65, no. 19, pp. 5092–5107, Oct. 2017. DOI: 10.1109/TSP.2017.2715001.

US and International Patents

1. T. A. Thomas, **D. Ogbe**, K. Venugopal, and A. Ghosh, "Frequency-domain transmitters and receivers which adapt to different subcarrier spacing configurations," U.S. Patent US10917278B2, Feb. 9, 2021.

Invited Talks and Posters

10. **D. Ogbe**, M. Kobayashi, Z. Towfic, M. Shihabi, C. Spurgers, L. White, and B. Douglas, "The UST-Lite radio: A multi-channel software-defined transponder for spacecraft and surface assets at the moon, mars, and beyond," presented at the 2025 Interplanetary Small Satellite Conference (ISSC) (talk only), Apr. 2025.
9. T. Tanaka, W. Jun, **D. Ogbe**, M. Kobayashi, and K. Cheung, "Case study of a single-satellite lunar navigation system using iris transponder's inter-spacecraft ranging, providing 15m or better in-situ user positioning on the lunar surface," presented at JPL Research Poster Day 2024 (poster only), Dec. 2024.
8. Z. Towfic, **D. Ogbe**, S. Janamian, A. Jongeling, D. Sheldon, and J. Sauvageau, "The JPL Snapdragon Co-Processor," presented at the 2024 Interplanetary Small Satellite Conference (ISSC) (talk only), May 2024.
7. **D. Ogbe**, M. Chase, and Z. Towfic, "Anomaly and interference detection for space radios and Iris," presented at the 2022 Interplanetary Small Satellite Conference (ISSC) (talk only), May 2022.
6. **D. Ogbe**, "BAM! Radio: A flexible software-defined radio platform for rapid prototyping of multi-hop wireless ad-hoc networks," presented at Facebook Connectivity Lab Research Workshop Summer 2019 (poster only), Jul. 2019.
5. **D. Ogbe**, C.-C. Wang, and D. J. Love, "On the optimal delay amplification factor of multi-hop relay channels," presented at the 2019 North American School of Information Theory (poster only), Jul. 2019.
4. **D. Ogbe**, "DARPA spectrum collaboration challenge: The convergence of communication, computation, and collaboration," presented at the 2018 Information Theory and Applications Workshop in San Diego (talk only), Feb. 2018.
3. C.-C. Wang, D. J. Love, and **D. Ogbe**, "Transcoding: A new strategy for relay channels," presented at IEEE Communication Theory Workshop, Miramar Beach, FL (poster only, also presented at the 2018 North American School of Information Theory), May 2018.
2. **D. Ogbe**, D. J. Love, and V. Raghavan, "Noisy beam alignment techniques for reciprocal MIMO channels," presented at the 2017 North American School of Information Theory (poster only), May 2017.
1. **D. Ogbe** and D. J. Love, "Distributed MIMO for communications and sensing," presented at the Purdue Symposium on Global Security and Defense Innovation (poster only), Dec. 2016.

Professional Service and Activities

Session Chairman

2024–present	Session Co-Chairman, IEEE Aerospace Conference, "12.05: Automation and Machine Learning Applications in Spacecraft Operations"
2018	Session Co-Chairman, IEEE Asilomar Conference on Signals, Systems, and Computers, "MP1b: mmWave Communications I"

TPC Member

2021	IEEE International Conference on Communications
2020–2021	Military Communications Conference (MILCOM)
2020	IEEE/CIC International Conference on Communications in China (ICCC)

Organizing Committee Member

2017 Co-Chair, IEEE-HKN Student Leadership Conference Organizing Committee

Peer Reviewer

2025 IEEE Transactions on Aerospace and Electronic Systems
2024–present IEEE Aerospace Conference
2016–2020 Military Communications Conference (MILCOM)
2020 Asilomar Conference on Signals, Systems, and Computers
2020 IEEE Journal on Selected Areas in Communications
2020 IEEE Transactions on Signal Processing
2019 IEEE Open Journal of Signal Processing
2016–2019 IEEE Wireless Communications Letters
2016–2019 IEEE Transactions on Communications
2016 IEEE Transactions on Microwave Theory and Techniques
2016 IEEE Vehicular Technology Conference

Department Committee Activities

2017–2019 Member, Purdue ECE Graduate Committee

Professional and Honorary Society Memberships

2020–present Institute of Electrical and Electronics Engineers (IEEE)
Member
2013–2020 *Student Member*

Eta Kappa Nu (HKN)
2015–2017 *President (Beta Chapter)*
2015 *Recording Secretary (Beta Chapter)*
2013 *Member (Epsilon Rho Chapter)*

Tau Beta Pi
2013 *Member (Tennessee Gamma Chapter)*

Honors and Accomplishments

2024 JPL Voyager Award: Exceptional technical leadership in development and tech transfer of the UST-Lite next-generation deep space radio
2024 JPL Team Award: Common Instrument Electronics Development
2023 JPL Team Award: UST-Lite Software Development
2022 JPL Team Award: Radiometric Ranging Analysis for the Human Landing System (HLS)
2021 JPL Team Award: Snapdragon Application Development
2020 Georgia Tech FOCUS Fellow
2019 IEEE Wireless Communications Letters Exemplary Reviewer
2019 NSF Student Travel Grant for ISIT
2019 Purdue College of Engineering Outstanding Graduate Student Service Scholarship
2016–2019 DARPA Spectrum Collaboration Challenge: phase 1 prize: \$750,000, phase 2 prize: \$375,000, phase 3 finalist
2015 Purdue ECE Magoon Award for Excellence in Teaching
2014 CoSIDA Academic All-America Team
2014 Tennessee Tech Athletics Man of the Year