# MATTHEW C. VALENTI, P.E.

IEEE Fellow
Professor
Lane Department of Computer Science and Electrical Engineering
West Virginia University

## CONTACT

929 Riverview Dr
Morgantown, WV 26505 USA
(304) 685-9322
Matthew.C.Valenti@gmail.com
http://community.wvu.edu/~mcvalenti/

## EDUCATION

**Ph.D. in Electrical Engineering**
Virginia Polytechnic Institute & State University (Virginia Tech), Blacksburg, VA, August 1999

**M.S. in Electrical Engineering**
Johns Hopkins University, Baltimore, MD, May 1995

**B.S. in Electrical Engineering**
Virginia Polytechnic Institute & State University (Virginia Tech), Blacksburg, VA, May 1992

## PROFESSIONAL EXPERIENCE

**West Virginia University**, Lane Department of Computer Science and Electrical Engineering
Professor – 2010 to present
Associate Professor – 2005 to 2010
Assistant Professor – August 1999 to 2005

*Administrative Capacities:*
Raymond J. Lane Department Chair – July 2020 to June 2021
Interim Chair – July 2019 to June 2020

**Center for Identification Technology Research (CITeR),** *an NSF I/UCRC*
Director, WVU Site – August 2014 to present.

**Virginia Tech,** Bradley Department of Electrical and Computer Engineering
Bradley Fellow, Graduate Research Assistant, and Instructor – August 1995 to July 1999

**U.S. Naval Research Laboratory**, Washington, DC
Electronics Engineer – Summer 1991, May 1992 to August 1995

## LICENSES

**Professional Engineer (P.E.)**
Registered in the state of West Virginia since 2011

**Amateur Radio License**
Amateur Extra Class. Call sign KC8NHN. Licensed since 1999

## TECHNICAL EXPERT EXPERIENCE

1. Fish & Richardson for General Motors, Nissan, Tesla, and Honda
   Dates: 2023-2024
   Venue: United States Patent and Trademark Office
   Cases: Petition for *Inter Partes* Review (IPR) of US Patent Nos. 10,447,450 (owned by Neo Wireless, LLC). IPR cases IPR2022-01567 (petitioned by Volkswagen Group of America, Inc., America Honda Motor Co., Inc., General Motors LLC, Nissan North America, Inc., and Tesla, Inc.)
   Technology: Resource allocation in an OFDM-based wireless cellular downlink.
   Activity: Substitute Expert Declaration (in support of IPR Petitions). Deposition (Feb. 8, 2024).

2. Fish & Richardson for General Motors, Nissan, Tesla, Honda, and Ford
   Dates: 2023-2024
   Venue: United States Patent and Trademark Office
   Cases: Petition for *Inter Partes* Review (IPR) of US Patent Nos. 10,075,941 (owned by Neo Wireless, LLC). IPR cases IPR2022-01537 (petitioned by Ford Motor Company, America Honda Motor Co., Inc., General Motors LLC, Nissan North America, Inc., and Tesla, Inc.)
   Technology: Link adaptation in an OFDM-based wireless cellular downlink.
   Activity: Substitute Expert Declaration (in support of IPR Petitions). Deposition (Feb. 9, 2024).

3. DLA Piper for Motorola
   Dates: 2023
   Venue: US. International Trade Commission (ITC)
   Case: Maxell, Ltd. v. Motorola Mobility LLC, Lenovo Group Ltd., and Lenovo (U.S.) Inc.
   In the Matter of Certain Mobile Electronic Devices
   US. International Trade Commission (ITC) Investigation No. 337-TA-1324
   Technology: LTE and 5G NR wireless technology. Dual connectivity operation.
   Activity: Expert Report (invalidity), rebuttal report (noninfringement, domestic industry practice). Deposition (Mar. 15, 2023). Prepared to give court testimony.
   *Case settled on June 20, 2023, two days before the hearing was scheduled to start.*

4. Sidley Austin for Lenovo
   Dates: 2022-2023
   Venue: United States District Court; District of Delaware
   Cases: Interdigital Technology Corporation v. Lenovo Holding Company, Inc.,
   Civil Action No. 19-1590-LPS
   Technology: Wireless technology including control signaling for LTE and HSPA.
   Activity: Expert Reports (invalidity and noninfringement). Deposition (Aug. 26, 2022).
   *Case is ongoing with a pending trial.*

5. Kirkland & Ellis for Samsung
   Dates: 2022-2023
   Venue: United States Patent and Trademark Office
   Cases: Petition for *Inter Partes* Review (IPR) of US Patent Nos. 7,116,710; 7,421,032; 7,916,781; and 8,284,833 (all owned by California Institute of Technology and petitioned by Samsung Electronics Co., Ltd)
   Technology: Forward error correction (FEC) coding including low density parity check (LDPC) codes and irregular repeat accumulate (IRA) codes.
   Activity: Expert Declarations (in support of IPR Petitions). *Case settled.*

6. Fish & Richardson for Apple
   Dates: 2022
   Venue: United States District Court; Eastern District of Texas Marshall Division
   Cases: Ericsson, Inc. and Telefonaktiebolaget L.M. Ericsson v. Apple Inc., Civil Action No. 2:21-cv-0036
   Technology: 5G NR wireless technology.
   Activity: Expert Reports (Patent portfolio technical evaluation and rebuttal). Deposition (Sept. 28, 2022). Prepared to give testimony before a jury.
   *Case settled on December 8, 2022 after the fourth day of trial.*

7. Fish & Richardson for Apple and its Brazilian entities
   Dates: 2022
   Venue: Brazil Courts: (1) 1st Business Court of the Capital District of Rio de Janeiro State (Case No. 0010664-19.2022.8.19.0001), and (2) Federal Court of Rio de Janeiro, 31st Court specialized in IP matters (Case No. 5016043-83.2022.4.02.5101)
   Cases: (1) Telefonaktiebolaget L.M. Ericsson vs. Allied Tecnologia S.A. and (2) Apple Computer Brasil Ltda. and Allied Tecnologia S.A. vs. Telefonaktiebolaget L.M. Ericsson
   Technology: Wireless technology including random access signaling for LTE.
   Activity: Expert Declarations (invalidity, noninfringement, and rebuttal).

8. Erise IP for Apple
   Dates: 2021-2022
   Venue: United States Patent and Trademark Office
   Cases: Petition for *Inter Partes* Review (IPR) of US Patent Nos. 8,023,990; 8,798,658; and 9,277,436 (all owned by Ericsson). IPR cases IPR2021-00459, IPR2022-00461, and IPR2022-00467 (petitioned by Apple Inc.). Request for Ex Parte Re-examination of US Patent No 10,476,722 (owned by Ericsson). Attorney Docket No. Apple.990
   Technology: Wireless technology including LTE-A minimization of drive testing (MDT) and 5G NR synchronization.
   Activity: Expert Declarations (in support of IPR Petitions and Ex Parte Re-examination). Deposition (Sept. 21, 2022 for the '658 patent).

9. Foley Hoag for Rideshare Displays, Inc.
   Dates: 2021-2022
   Venue: United States Patent and Trademark Office
   Cases: Patent owner's response to *Inter Partes* Review (IPR) of US Patent Nos. 9,892,637; 10,169,987; 10,395,525; 10,559,199; and 10,748,417 (all owned by Rideshare Displays, Inc.). IPR cases IPR2021-01598 to IPR2021-01602 (petitioned by Lyft, Inc.)
   Technology: Vehicle identification technology.
   Activity: Expert Declarations (in support of Patent Owner's responses to IPR Petitions, responses to Board's decision to institute, and motions to amend claims). Deposition (Sept. 9, 2022).

10. Fish & Richardson for LG Electronics, Inc., LG Electronics USA, Inc., Dell Inc., and Dell Technologies, Inc.
    Dates: 2021-2022
    Venue: United States Patent and Trademark Office
    Cases: Petition for *Inter Partes* Review (IPR) of US Patent Nos. 8,467,366 and 10,833,908 (owned by Neo Wireless LLC). IPR cases IPR2021-01480 and IPR2022-00277 (petitioned by Dell Inc.)
    Technology: Wireless technology including OFDM transmissions, random access, and ranging signals.
    Activity: Expert Declarations (in support of IPR Petitions).

11. Kirkland & Ellis for Lenovo
    Dates: 2020-2021
    Venue: UK High Court
    Cases: InterDigital Technology Corporation and others v Lenovo Group Limited and others (Claim No. HP-2019 000032)
    Technology: Wireless technology including control signaling for LTE.
    Activity: Expert Report (invalidity, non-essentiality, two rebuttal reports). Court Testimony (UK bench trial): Mar. 5-9, 2021.

12. Fish & Richardson for LG Electronics, Inc.
    Dates: 2019-2020
    Venue: United States Patent and Trademark Office
    Cases: Petition for *Inter Partes* Review (IPR) of US Patent No. 7,039,435 (owned by Bell Northern Research). IPR case IPR2020-00319 (petitioned by LG Electronics, Inc.)
    Technology: Wireless technology including power control of wireless transmissions.
    Activity: Expert Declaration (in support of IPR Petition).

13. Fish & Richardson for Apple
    Dates: 2017-2019
    Venue: United States District Court; Southern District of California
    Cases: Apple Inc. v. Qualcomm Inc., Civil Action No. 3:17-cv-00108
    Technology: LTE wireless technology.
    Activity: Expert Report (Patent portfolio technical evaluation). Deposition (Oct. 17, 2018). *Testimony before jury was scheduled for April 22, 2019, but case settled after opening arguments.*

14. Quinn Emanuel Urquhart & Sullivan for Samsung
    Dates: 2017-2018
    Venue: United States District Court; Northern District of California (San Francisco Division) and United States Patent and Trademark Office
    Cases: Samsung Electronics Co., LTD, et al. (counterclaim-plaintiffs) v. Huawei Technologies Co., LTD., et al. (counterclaim-defendants), Case No. 16-cv-02787-WHO
    Huawei Technologies Co., LTD vs. Samsung Electronics Co., LTD, Case IPR2017-01974 (US Patent 8,457,588)
    Huawei Technologies Co., LTD vs. Samsung Electronics Co., LTD, Case IPR2017-01982 (US Patent 8,228,827)
    Technology: LTE wireless technology.
    Activity: Declarations (Claim Construction, 2 Patent Owner's Responses to Petition for IPR); Expert Report (Infringement); Rebuttal Report (Validity). Depositions (June 20, 2018, Aug. 10, 2018, Aug. 11, 2018).

15. Baker Botts for AT&T; Gibson, Dunn & Crutcher for T-Mobile
    Dates: 2016-2017
    Venue: United States District Court; District of Delaware
    Cases: (a) Intellectual Ventures I LLC v. AT&T Mobility LLC et al., Civil Action No. 12-CV-193-LPS (D. Del.); Intellectual Ventures I LLC v. AT&T Mobility LLC et al., Civil Action No. 1:15-CV-00799-LPS.
    (b) Intellectual Ventures I LLC v. T-Mobile USA Inc. et al. D. Del. Case No. 1:13-cv-1632-LPS.
    Technology: HSDPA wireless technology.
    Activity: Expert Report; Declaration; Sur-Reply Report. Deposition (Mar. 23, 2017).

16. Rothwell Figg for LG; Paul Hastings for Samsung; Mayer Brown for Motorola Mobility
    Dates: 2016
    Venue: United States District Court; Southern District of California
    Cases: (a) Odyssey Wireless Inc. v. LG Electronics USA, Inc. et al., Civil Action No. 3:15-cv-01746-H-RBB (S.D. Cal.).
    (b) Odyssey Wireless Inc. v. Samsung Electronics Co. et al., Civil Action No. 3:15-cv-01738-H-RBB (S.D. Cal.).
    (c) Odyssey Wireless Inc. v. Motorola Mobility, Civil Action No. 3:15-cv-01741-H-RBB (S.D. Cal.).
    Technology: LTE wireless technology.
    Activity: Expert Report (noninfringement). Deposition (Aug. 24, 2016).

17. Sheppard Mullin for Samsung; Gibson Dunn and Wilmer Hale for Intel; Boies Schiller for Apple
    Dates: 2016
    Case: Various regulatory agencies' investigations of Qualcomm Incorporated ("Qualcomm"), including the Korean Fair Trade Commission (the "KFTC") and the United States Federal Trade Commission (the "FTC").
    Technology: LTE wireless technology.
    Activity: Declaration (technical analysis of patent portfolio).

18. Boies, Schiller & Flexner for Apple; Sheppard, Mullin, Richter & Hampton for HTC; Kilpatrick Townsend & Stockton for Lenovo and Motorola Mobility; Quinn Emanuel Urquhart & Sullivan for Samsung; McDermott Will & Emery for ZTE; Sidley Austin for Microsoft
    Dates: 2016
    Venue: United States District Court; District of Delaware
    Cases: (a) Evolved Wireless, LCC, v. Apple Inc., Civil Action No. 1:15-cv-00542-SLR.
    (b) Evolved Wireless, LCC, v. HTC Corporation and HTC America, Inc., Civil Action No. 1:15-cv-00543-SLR. (c) Evolved Wireless, LCC, v. Lenovo Group Ltd., Lenovo (United States) Inc., and Motorola Mobility, Civil Action No. 1:15-cv-00544-SLR.
    (d) Evolved Wireless, LCC v. Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc., Civil Action No. 1:15-cv-00545-SLR. (e) Evolved Wireless, LCC v. ZTE Corporation, ZTE (USA) Inc., and ZTE Solutions Inc., Civil Action No. 1:15-cv-00546-SLR. (f) Evolved Wireless, LCC v. Microsoft Corporation, Microsoft Mobile OY and Nokia Inc., Civil Action No. 1:15-cv-00547-SLR.
    Technology: LTE wireless technology.
    Activity: Declaration (claim construction).

19. Williams & Connolly
    Dates: 2015
    Case: Confidential Parties (Leading Global Wireless Communication Companies)
    Consolidated Arbitrations Under the International Chamber of Commerce Rules.
    Technology: LTE wireless technology.
    Activity: Expert Report (patent portfolio technical evaluation).

20. Kirkland & Ellis for Samsung
    Dates: 2013
    Case: Samsung Electronics and Samsung Telecommunications America v. Ericsson Inc.
    In the Matter of Certain Wireless Communications Equipment and Articles Therein
    US. International Trade Commission (ITC) Investigation No. 337-TA-866
    Technology: LTE wireless technology.
    Activity: Expert Report (infringement, domestic industry practice), rebuttal report (validity). Court testimony (ITC bench trial): direct (Oct. 23, 2013) and rebuttal (Oct. 30, 2013).

21. Quinn Emanuel Urquhart & Sullivan, LLP for Samsung
    Dates: 2013
    Case: Samsung Electronics GmbH v. Apple Inc.
    German Patent Court, Case Number 5 Ni 49/11
    Technology: Turbo codes; LTE wireless technology.
    Activity: Declaration (validity).

22. Kirkland & Ellis for DIRECTV
    Dates: 2009
    Case: Rembrandt Data Technologies v. DIRECTV, Inc. et al.
    Eastern District of Virginia, Case No. 1:08cv1009
    Technology: Telephone modems; set-top boxes.
    Activity: Rebuttal Expert Report (non-infringement). Deposition (May 20, 2009).

23. Kirkland & Ellis for Samsung
    Dates: 2006
    Case: Samsung Electronics and Samsung Telecommunications America v. Ericsson Inc.
    In the Matter of Certain Wireless Communications Equipment, Articles Therein, and Products Containing the Same
    ITC Investigation No. 377-TA-577
    Technology: WCDMA/UMTS wireless technology; mobile phone handsets.
    Activity: Declaration (domestic industry practice). Deposition (Nov. 17, 2006).

## OTHER RECENT TECHNICAL CONSULTING

1. 4D Tech Solutions, Morgantown, WV
   *Nonorthogonal Frequency Division Multiplexing*
   July 2017 to December 2018.

2. WPL, Manhattan Beach, CA
   *Survivable, Secure and Dependable Wireless Communications*
   August 2016 to February 2017.

## HONORS AND AWARDS

**IEEE Communications Society, Communication Theory Technical Committee Outstanding Service Award (2021)**
*Career award for service to the communication theory community*

**IEEE MILCOM Award for Sustained Technical Achievement (2019)**
*Career award for contributions to military communications*

**Fellow, Institute of Electrical and Electronics Engineers (IEEE)**
*Elevated to Fellow in 2018 for contributions to cooperative diversity and the development of distributed turbo codes*

**WVU Foundation Outstanding Teaching Award (2013)**
*Highest teaching award at West Virginia University*

**Outstanding Teacher (2012, 2009, 2006, 2003, and 2001)**
**Outstanding Advisor (2012, 2004)**
**Outstanding Researcher (2008, 2001, and 2000)**
*West Virginia University, Statler College of Engineering & Mineral Resources (College-level awards)*

**Bradley Fellow,** August 1995-May 1998
*Virginia Tech, Bradley Department of Electrical Engineering (highest departmental fellowship)*

## PUBLICATIONS

**Refereed Journal Articles**

1. P. Das, R. Plesh, V. Talreja, N. Schmid, **M.C. Valenti**, J. Skufca, and S. Schuckers, "Empirical assessment of end-to-end iris recognition system capacity," *IEEE Transactions on Biometrics, Behavior, and Identity Science*, vol. 5, no. 2, pp. 154-169, April 2023.
2. F. Taherkhani, V. Talreja, J. Dawson, **M.C. Valenti**, and N.M. Nasrabadi "Profile to frontal face recognition in the wild using coupled conditional generative adversarial network," *IET Biometrics,* vol. 11, no. 3, pp. 260-272, May 2022.
3. T. Ketseoglou, **M.C. Valenti**, and E. Ayanoglu "Millimeter wave massive MIMO downlink per-group communications with hybrid linear precoding," *IEEE Transactions on Vehicular Technology,* vol. 70, no. 7, pp. 6841-6854, July 2021.
4. V. Talreja, **M.C. Valenti** and N. M. Nasrabadi, "Deep hashing for secure multimodal biometrics," *IEEE Transactions on Information Forensics and Security*, vol. 16, pp. 1306-1321, 2021.
5. F. Taherkhani, V. Talreja, **M.C. Valenti**, and N.M. Nasrabadi "Error-corrected margin-based deep cross-modal hashing for facial image retrieval," *IEEE Transactions on Biometrics, Behavior, and Identity Science,* vol. 2, no. 3, pp. 279-293, July 2020.
6. E. Hriba and **M.C. Valenti**, "Correlated blocking in mmwave cellular networks: Macrodiversity, outage, and interference," *Electronics (Special Issue on Millimeter-Wave (mmWave) Communications),* vol. 8, no. 10, article number 1187, Oct. 2019.
7. T. Ferrett and **M.C. Valenti**, "Noncoherent LDPC-coded physical-layer network coding using multitone FSK," *IEEE Transactions on Communications*, vol. 66, no. 6, pp. 2384-2395, June 2018.
8. D. Torrieri, S. Talarico, and **M.C. Valenti**, "Analysis of a frequency-hopping millimeter-wave cellular uplink," *IEEE Transactions on Wireless Communications*, vol. 15, no. 10, pp. 7089-7098, Oct. 2016.
9. K. Venugopal, **M.C. Valenti**, and R. W. Heath, Jr., "Device-to-device millimeter wave communications: Interference, coverage, rate, and finite topologies," *IEEE Transactions on Wireless Communications*, vol. 15, no. 9, pp. 6175-6188, Sept. 2016.
10. D. Torrieri, S. Talarico, and **M.C. Valenti**, "Performance comparisons of geographic routing protocols in mobile ad hoc networks," *IEEE Transactions on Communications,* vol. 63, no. 11, pp. 4276-4286, Nov. 2015.
11. P. Rost, S. Talarico, and **M.C. Valenti**, "The complexity-rate tradeoff of centralized radio access networks," *IEEE Transactions on Wireless Communications,* vol. 14, no. 11, pp. 6164-6176, Nov. 2015.
12. **M.C. Valenti**, D. Torrieri, and S. Talarico, "A direct approach to computing spatially averaged outage probability," *IEEE Communications Letters,* vol. 18, no. 7, pp. 1103-1106, July 2014.
13. S. Talarico, N.A. Schmid, M. Alkhweldi, and **M.C. Valenti**, "Distributed estimation of a parametric field: Algorithms and performance analysis," *IEEE Transactions on Signal Processing,* vol. 62, no. 5, pp. 1041-1053, Mar 1, 2014.
14. D. Torrieri, **M.C. Valenti**, and S. Talarico, "An analysis of the DS-CDMA cellular uplink for arbitrary and constrained topologies," *IEEE Transactions on Communications,* vol. 61, no. 8, pp. 3318-3326, Aug. 2013.
15. D. Torrieri and **M.C. Valenti**, "Exclusion and guard zones in DS-CDMA ad hoc networks," *IEEE Transactions on Communications,* vol. 61, no. 6, pp. 2468-2476, June 2013.
16. D. Torrieri and **M.C. Valenti**, "The outage probability of a finite ad hoc network in Nakagami fading," *IEEE Transactions on Communications*, vol. 60, pp. 3509-3518, Nov. 2012.
17. **M.C. Valenti** and X. Xiang, "Constellation shaping for bit-interleaved LDPC coded APSK," *IEEE Transactions on Communications*, vol. 60, pp. 2960-2970, Oct. 2012.

18. **M.C. Valenti**, D. Torrieri, and T. Ferrett, "Noncoherent physical-layer network coding with FSK modulation: Relay receiver design issues," *IEEE Transactions on Communications,* vol. 59, no. 9, pp. 2595-2604, Sept. 2011.
19. D. Torrieri and **M.C. Valenti**, "Rapidly-converging series representations of a mutual-information integral," *ISRN Communications and Networking*, vol. 2011, Article ID 546205, 6 pages, 2011.
20. **M.C. Valenti**, S. Cheng, and D. Torrieri "Iterative multisymbol noncoherent reception of coded CPFSK," *IEEE Transactions on Communications*, vol. 58, no. 7, pp. 2046-2054, July 2010.
21. D. Torrieri and **M.C. Valenti**, "Efficiently decoded full-rate space-time block codes," *IEEE Transactions on Communications*, vol. 58, no. 2, pp. 480-488, Feb. 2010.
22. S. Cheng, **M.C. Valenti**, and D. Torrieri, "Coherent continuous-phase frequency-shift keying: Parameter optimization and code design," *IEEE Transactions on Wireless Communications,* vol. 8, no. 4, pp. 1792-1802, Apr. 2009.
23. D. Torrieri and **M.C. Valenti**, "Constellation labeling maps for low error floors," *IEEE Transactions on Wireless Communications,* vol. 7, no. 12, pp. 5401-5407, Dec. 2008.
24. D. Torrieri, S. Cheng, and **M.C. Valenti**, "Robust frequency hopping for interference and fading channels," *IEEE Transactions on Communications,* vol. 56, no. 8, pp. 1343-1351, Aug. 2008.
25. K. Vardhe, D. Reynolds, and **M.C. Valenti**, "The performance of multi-user cooperative diversity in an asynchronous CDMA uplink," *IEEE Transactions on Wireless Communications*, vol. 7, no. 5, pp. 1930-1940, May 2008.
26. R. Iyer Seshadri and **M.C. Valenti**, "Capacity-based parameter optimization of bit-interleaved coded CPM with differential detection," *IEEE Transactions on Vehicular Technology*, vol. 57, no. 1, pp. 345-353, Jan. 2008
27. S. Cheng, **M.C. Valenti**, and D. Torrieri, "Robust iterative noncoherent reception of coded FSK over block fading channels," *IEEE Transactions on Wireless Communications,* vol. 6, no. 9, pp. 3142-3147, Sept. 2007.
28. S. Wei, D.L. Goeckel, and **M.C. Valenti**, "Asynchronous cooperative diversity," *IEEE Transactions on Wireless Communications*, vol. 5, no. 6, pp. 1547-1557, June 2006.
29. B. Zhao and **M.C. Valenti**, "Position-based relaying with hybrid-ARQ for efficient ad hoc networking," *EURASIP Journal on Wireless Communications and Networking*, vol. 5, no. 5, pp. 610-624, Dec. 2005.
30. **M.C. Valenti** and S. Cheng, "Iterative demodulation and decoding of turbo coded M-ary noncoherent orthogonal modulation," *IEEE Journal on Selected Areas in Communications,* vol. 23, no. 9, pp. 1738-1747, Sept. 2005.
31. J. Sun and **M.C. Valenti**, "Joint synchronization and SNR estimation for turbo codes in AWGN channels," *IEEE Transactions on Communications*, vol. 53, no. 7, pp. 1136-1144, July 2005.
32. B. Zhao and **M.C. Valenti**, "Practical relay networks: A generalization of hybrid-ARQ," *IEEE Journal on Selected Areas in Communications,* vol. 23, no. 1, pp. 7-18, Jan. 2005.
33. B. Zhao and **M.C. Valenti**, "Distributed turbo coded diversity for the relay channel," *IEE Electronics Letters*, vol. 39, no. 10, pp. 786-787, May 15, 2003.
34. **M.C. Valenti** and J. Sun, "The UMTS turbo code and an efficient decoder implementation suitable for software defined radios," *International Journal on Wireless Information Networks,* vol. 8, no. 4, pp. 203-216, Oct. 2001.
35. **M.C. Valenti** and B.D. Woerner, "Pilot symbol assisted detection of turbo codes over flat-fading channels," *IEEE Journal on Selected Areas in Communications*, vol. 19, pp. 1697-1705, Sept. 2001.

36. **M.C. Valenti** and B.D. Woerner, "Iterative multiuser detection, macrodiversity combining and decoding for the TDMA cellular uplink", *IEEE Journal on Selected Areas in Communications*, vol. 19, pp. 1570-1583, Aug. 2001.
37. **M.C. Valenti** and B.D. Woerner, "Distributed multiuser detection for the TDMA cellular uplink," *IEE Electronics Letters*, vol. 35, no. 21, pp. 1803-1804, Oct. 21, 1999.
38. **M.C. Valenti** and B.D. Woerner, "Refined channel estimation for coherent detection of turbo codes over flat-fading channels," *IEE Electronics Letters*, vol. 34, no. 17, pp. 1648-1649, Aug. 20, 1998.

**Magazine Articles**

1. P. Rost, I. Berberana, A. Maeder, H. Paul, V. Suryaprakash, **M.C. Valenti**, D. Wubben, A. Dekorsy, and G. Fettweis, "Benefits and challenges of virtualization in 5G radio access networks," *IEEE Communications Magazine,* vol. 53, no. 12, *Communications Standards Supplement*, pp. 75-82, Dec. 2015.
2. N. Chandran and **M.C. Valenti**, "Cellular communication systems: Three generations of evolution in wireless technology," *IEEE Potentials*, vol. 20, no. 1, pp. 32-35, Feb./March 2001.

**Book Chapters**

1. E. Hriba and **M.C. Valenti**, "Correlated blocking in mmwave cellular networks: Macrodiversity, outage, and interference," in *Millimeter-Wave (mmWave) Communications*, MDPI, 2020, pp. 137-153.
2. V. Talreja, T. Ferrett, **M.C. Valenti**, and A. Ross, "A framework for secure selfie-based biometric authentication in the cloud," Chapter 14 of *Selfie Biometrics: Advances and Challenges*, Springer, 2019, pp. 275-297.
3. P. Rost, **M.C. Valenti**, S. Talarico, and A. Maeder, "The tradeoff of computational complexity and achievable rates in C-RANs," Chapter 3 of *Cloud Radio Access Networks: Principles, Technologies, and Applications*, Cambridge University Press, 2017.
4. **M.C. Valenti** and M. Fanaei, "The interplay between modulation and channel coding," Chapter 5 of *Transmission Techniques for Digital Communications*, Elsevier, 2016.
5. **M.C. Valenti** and D. Reynolds, "Distributed space-time block codes," Chapter 6 in *Cooperative Cellular Wireless Networks*, Edited by E. Hossain, D.I. Kim, and V.K. Bhargava, Cambridge University Press, 2011, pp. 153-175.
6. **M.C. Valenti**, S. Cheng, and R. Iyer Seshadri, "Turbo and LDPC codes for digital video broadcasting," in *Turbo Code Application: A Journey from a Paper to Realization*, Edited by K. Sripimanwat, Springer, 2005.
7. **M.C. Valenti** and J. Sun, "Turbo codes," in *Handbook of RF and Wireless Technologies*, Edited by F. Dowla Editor, Newnes Press, 2004, pp. 375-399.

**Refereed Conference Papers**

1. J.D. Pabon, **M.C. Valenti**, and X. Yu, "Where to deploy an airborne relay in unknown environments: Feasible locations for throughput and LoS enhancement," in *Proc. IEEE Military Commun. Conf. (MILCOM)*, (Boston, MA), Nov. 2023.
2. J.D. Pabon, S. Alkhandari, **M.C. Valenti**, and X. Yu, "Air-aided communication between ground assets in a Poisson forest," in *Proc. IEEE Military Commun. Conf. (MILCOM)*, (Rockville, MD), Nov. 2022.
3. V. Talreja, N.M. Nasrabadi, and **M.C. Valenti**, "Attribute-based deep periocular recognition: Leveraging soft biometrics to improve periocular recognition," in *Proc. Winter Conf. on Applications of Computer Vision (WACV)*, (Waikoloa, HI), Jan. 2022.
4. E. Hriba, **M.C. Valenti,** and R.W. Heath, Jr. "Optimization of a millimeter-wave UAV-to-ground network in urban deployments," in *Proc. IEEE Military Commun. Conf. (MILCOM)*, (San Diego, CA), Nov. 2021.

5. A. Ammar, **M.C. Valenti**, and D. Reynolds, "Relay selection with wireless energy transfer in mmwave networks" in *Proc. IEEE Consumer Communications & Networking Conference (CCNC)*, Jan. 2021.
6. F. Taherkhani, V. Talreja, J. Dawson, **M.C. Valenti**, and N.M. Nasrabadi, "PF-cpGAN: Profile to frontal coupled GAN for face recognition in the wild" in *Proc. IEEE Int. Joint Conf. on Biometrics (IJCB)*, (Houston, TX), Sept. 2020. Best Biometric Student Paper Award.
7. T. Ketseoglu, **M.C. Valenti,** and E. Ayanoglu, "Millimeter wave massive MIMO downlink per group communications with hybrid linear precoding," in *Proc. Asilomar Conf. on Signals, Sys., & Computers*, (Pacific Grove, CA), Nov. 2019.
8. E. Hriba and **M.C. Valenti**, "The potential gains of macrodiversity in mmwave cellular networks with correlated blocking," in *Proc. IEEE Military Commun. Conf. (MILCOM)*, (Norfolk, VA), Nov. 2019.
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98. **M.C. Valenti**, "Inserting turbo code technology in the DVB satellite broadcasting system," in *Proc. Military Communications International Symposium (MILCOM)*, (Los Angeles, CA), Nov. 2000, pp. 650-654.

99. **M.C. Valenti**, "Iterative channel estimation and decoding of turbo codes over flat-fading channels," in *Proc. IEEE Wireless Communications and Networking Conference (WCNC),* (Chicago, IL), Sept. 2000, pp. 1019-1024, invited paper.

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**Other Conference Papers**

109. S. Talarico, **M.C. Valenti**, and D. Torrieri, "Analysis and optimization of a frequency hopping ad hoc network in Rayleigh fading," in *Proc. Virginia Tech Symp. on Wireless Personal Commun.*, (Blacksburg, VA), May 2012.

110. M. Fanaei, **M.C. Valenti**, and N. Schmid, "Distributed parameter estimation in wireless sensor networks using fused local observations," in *Proc. SPIE Wireless Sensing, Localization, and Processing VII*, (Baltimore, MD), Apr. 2012.

111. M. Fanaei, **M.C. Valenti**, N. Schmid and V. Kulathumani, "Channel-aware distributed classification using binary local decisions," in *Proc. SPIE Signal Processing, Sensor Fusion, and Target Recognition XX*, (Orlando, FL), Apr. 2011.

112. X. Chen, S. Gong, N.A. Schmid, and **M.C. Valenti**, "UAV based distributed ATR under realistic simulated environmental effects," in *Proc. SPIE Signal Processing, Sensor Fusion, and Target Recognition XVI*, (Orlando, FL), Apr. 2007.

113. R. Iyer Seshadri and **M.C. Valenti**, "A capacity-based search for energy and bandwidth efficient bit-interleaved coded noncoherent GFSK," in *Proceedings of the Virginia Tech Symp. on Wireless Personal Commun.*, (Blacksburg, VA), June 2006.

114. B. Zhao and **M.C. Valenti**, "Cooperative diversity using distributed turbo codes," in *Proc. Virginia Tech Symp. on Wireless Personal Commun.*, (Blacksburg, VA), June 2003, pp.143-152.

115. N. Chandran and **M.C. Valenti**, "Bridging the gap between parallel and serial concatenated codes," in *Proc. Virginia Tech Symp. on Wireless Personal Commun.*, (Blacksburg, VA), June 2002, pp. 145-154.

116. B. Zhao and **M.C. Valenti**, "Iterative demodulation and decoding of DPSK modulated turbo codes over Rayleigh fading channels," in *Proc. Virginia Tech Symposium on Wireless Personal Communications*, (Blacksburg, VA), June 2001, pp. 259-270.

117. D. Baker and **M.C. Valenti**, "The impact of channel estimation errors on space time block codes," in *Proc. Virginia Tech Symposium on Wireless Personal Communications*, (Blacksburg, VA), June 2001, pp. 175-186.

118. **M.C. Valenti**, "Turbo codes and iterative processing," in *Proc. IEEE New Zealand Wireless Commun. Symp.*, (Auckland, New Zealand), Nov. 1998.

## PRESENTATIONS

**Invited Research Seminars and Tutorial Presentations**

1. "Deep hashing for secure biometrics," invited seminar, University of North Dakota (Grand Forks, ND), February 22, 2024.
2. "Air-assisted broadband communications," invited seminar, *Hughes Network Systems* (Germantown, MD), August 4, 2022.
3. "Unlocking the promise of 5G," invited seminar, *University of South Carolina* (Columbia, SC), April 1, 2022.
4. "Cloud radio access networks for 5G communications," invited seminar, *Hughes Network Systems* (Germantown, MD), June 8, 2018.
5. "Cloud radio access networks for 5G communications," invited seminar, *Michigan Technological University* (Houghton, MI), April 13, 2018.
6. "Centralized radio access networks: Moving baseband to the Cloud," a half-day tutorial presented at the *IEEE International Conference on Communications* (Kuala Lumpur, Malaysia), May 27, 2016.
7. "The computational requirements of centralized RAN," invited presentation, *Communication Theory Workshop* (Nafplio, Greece), May 16, 2016.
8. "Research challenges in biometrics", invited seminar, *Biometrics Institute meeting* (Australian Embassy, Washington, DC), Sep. 15, 2015.
9. "Computational outage: A new KPI for C-RAN," invited seminar, *University of Southampton* (Southampton, UK), June 12, 2015.
10. "Centralized radio access networks: Moving baseband to the Cloud," a half-day tutorial presented at the *Virginia Tech Symposium on Wireless Personal Communications and Annual Wireless Summer School*, (Blacksburg, VA), May 28, 2015.
11. "Coverage and rate in finite-sized device-to-device millimeter wave networks," invited seminar, *McGill University* (Montreal, Quebec), Mar. 23, 2015.
12. "Centralized radio access networks: The case for baseband in the cloud," invited seminar, *University of Toronto* (Toronto, ON), Nov. 12, 2014.
13. "Centralized radio access networks: The case for baseband in the cloud," invited seminar, *University of New Mexico* (Albuquerque, NM), Oct. 31, 2014.

14. "Mobile biometrics in the cloud," invited presentation, *Smart Card Alliance Government Conference* (Washington, DC), Oct. 30, 2014.
15. "Computational communication theory: A modern tool for engineering future wireless networks," invited seminar, *Motorola Labs* (Plantation, FL), May 23, 2014.
16. "Interference and spatial modeling in wireless networks," invited seminar, *University at Buffalo, The State University of New York* (Buffalo, NY), May 15, 2014.
17. "Interference and spatial modeling in wireless networks," invited seminar, *University of Pisa* (Pisa, Italy), May 5, 2014.
18. "A day in the life of an LTE handset," a half-day tutorial presented at the *Virginia Tech Symposium on Wireless Personal Communications and Annual Wireless Summer School*, (Blacksburg, VA), May 30, 2013.
19. "Interference and spatial modeling in wireless networks," invited seminar, *Clemson University*, May 28, 2013
20. "Constellation shaping for LDPC-coded APSK," invited seminar, *Hughes Network Systems* (Germantown, MD), Mar. 14, 2013.
21. "The LTE physical layer," a half-day tutorial presented at the *Virginia Tech Symposium on Wireless Personal Communications*, (Blacksburg, VA), June 1, 2012.
22. "A high-performance computing approach to wireless network optimisation," invited seminar, *University of Auckland* (Auckland, New Zealand), Feb. 3, 2012.
23. "Communication theory in the cloud: The transformative power of cheap utility computing," plenary, *Australian Communication Theory Workshop* (Wellington, New Zealand), Jan. 30, 2012.
24. "Modern digital satellite television: How it works," invited seminar, *United States Naval Academy*, Nov. 7, 2011.
25. "Modern digital satellite television: How it works," invited seminar, *Georgia Institute of Technology,* Nov. 1, 2011.
26. "The transmission capacity of frequency-hopping ad hoc networks," invited seminar, *Osaka University*, June 13, 2011.
27. "LDPC codes: Achieving the capacity of the binary erasure channel," invited talk, *Math/CS Colloquium* (West Virginia University, Morgantown, WV), Nov. 30, 2009.
28. "Communication theory in the cloud," invited seminar*, University of Toronto*, Oct. 30, 2009.
29. "Channel coding for IEEE 802.16e mobile WiMAX," a half-day tutorial presented at the *IEEE International Conference on Communications* (Dresden, Germany), June 18, 2009.
30. "Channel coding for IEEE 802.16e mobile WiMAX," a half-day tutorial presented at the *Virginia Tech Symposium on Wireless Personal Communications* (Blacksburg, VA), June 4, 2009.
31. "Mutual information as a tool for the design, analysis, and testing of modern communication systems," invited seminar presented to *Hughes Network Systems*, (Germantown, MD), June 8, 2007.
32. "Turbo and LDPC codes: Implementation, simulation, and standardization," a half-day tutorial presented at the *16th Virginia Tech/MPRG Symposium on Wireless Personal Communications and 2nd Annual Wireless Summer School*, (Blacksburg, VA), June 2006.
33. "Distributed Simulation of Modern Communication Systems Using the Global Grid Exchange," invited presentation, *Teaming to Win Conference*, Stonewall Jackson Resort (Walkersville, WV), June 1, 2006.
34. "Distributed Simulation of Modern Communication Systems Using the Global Grid Exchange," invited presentation, *West Virginia University Computing & Technology Symp.*, Apr. 12, 2006.

35. "Modern wireless network design based on constrained capacity," invited seminar, *Pittsburgh Signal Processing Society Seminar*, University of Pittsburgh, April 20, 2005.
36. "Coded-protocols for implementing cooperative diversity," invited research colloquium, *Motorola Corporate Research Labs*, (Schaumburg, IL), June 30, 2004.
37. "Bluetooth: Throughput analysis and tricks to improve performance," invited seminar, *Ohio University*, (Athens, OH), May 15, 2002.
38. "Bluetooth: Link and physical layer," invited research colloquium, *Motorola Florida Research Labs,* (Plantation, FL), Mar. 25, 2002.
39. "Turbo codes and iterative processing," invited research colloquium, *Motorola Florida Research Labs,* (Plantation, FL), Mar. 22, 2002.
40. "Emerging wireless standards," invited presentation, *Second YAS Broadband Venture Seminar,* West Virginia University, (Morgantown, WV), Sept. 7, 2001.
41. "Wireless communications research at West Virginia University," invited research colloquium, *National Radio Astronomy Observatory (NRAO),* (Green Bank, WV), June 13, 2000.

**Oral Conference Presentations**

1. "Where to deploy an airborne relay in unknown environments: Feasible locations for throughput and LoS enhancement," *IEEE Military Commun. Conf. (MILCOM)*, (Boston, MA), Nov. 2, 2023.
2. "Learning to authenticate with deep multibiometric hashing and neural network decoding," *IEEE International Conference on Communications (ICC)*, (Shanghai, China), May 21, 2019.
3. "The impact of correlated blocking on millimeter-wave personal networks," *IEEE Military Commun. Conf. (MILCOM)*, (Los Angeles, CA), Oct. 29, 2018.
4. "Outage correlation in finite and clustered wireless networks," *IEEE Int. Symp. on Personal, Indoor, & Mobile Radio Commun. (PIMRC)*, (Bologna, Italy), Sept. 12, 2018.
5. "Accurately accounting for random blockage in device-to-device mmwave networks," *IEEE Global Commun. Conf. (GLOBECOM)*, (Singapore), Dec. 5, 2017.
6. "Controlled barrage regions: Stochastic modeling, analysis, and optimization," *IEEE Military Commun. Conf. (MILCOM)*, (Baltimore, MD), Nov. 2016.
7. "Frequency hopping on a 5G millimeter uplink," *Asilomar Conf. on Signals, Sys., & Computers*, (Pacific Grove, CA), Nov. 2015
8. "Optimization of an adaptive frequency-hopping networks," *IEEE Military Commun. Conf. (MILCOM)*, (Tampa, FL), Oct. 2015.
9. "Effects of spatial randomness on locating a point source with distributed sensors," *IEEE Int. Conf. on Commun. (ICC) Workshop on Advances in Network Localization and Navigation (ANLN)*, (Sydney), June 2014.
10. "An iterative noncoherent relay receiver for the two-way relay channel," *IEEE Int. Conf. on Commun. (ICC),* (Budapest, Hungary), June 2013.
11. "Closing the gap to the capacity of APSK: Constellation shaping and degree distributions," *Int. Conf. on Computing, Networking, and Commun. (ICNC),* (San Diego, CA), Jan. 2013.
12. "Analysis and optimization of a frequency hopping ad hoc network in Rayleigh fading," *Virginia Tech Symp. on Wireless Personal Commun.*, (Blacksburg, VA), May 30, 2012.
13. "Iterative multisymbol noncoherent reception of coded CPFSK," presented at the *IEEE Military Communications Conference (MILCOM)*, (Boston, MA), Oct. 19, 2009.
14. "Robust frequency-hopping system for channels with interference and frequency-selective fading," *IEEE Int. Conf. on Commun. (ICC)*, (Glasgow, Scotland), June 2007.

15. "The impact of an antenna array in a relay network," *IEEE Int. Conf. on Commun. (ICC)*, (Glasgow, Scotland), June 2007.
16. "Macrodiversity packet combining for the IEEE 802.11a uplink," *IEEE Wireless Commun. & Networking Conf. (WCNC)*, (New Orleans, LA), Mar. 2005.
17. "Bit-interleaved turbo-coded noncoherent orthogonal modulation with iterative demodulation and decoding: Capacity limits and convergence analysis," *Asilomar Conference on Signals, Systems, and Computers*, (Pacific Grove, CA), Nov. 2004.
18. "Hybrid-ARQ based intra-cluster geographic relaying," *IEEE Military Commun. Conf. (MILCOM)*, (Monterey, CA), Nov. 2004, invited presentation.
19. "Towards the capacity of noncoherent orthogonal modulation: BICM-ID for turbo coded NFSK," *IEEE Military Commun. Conf. (MILCOM)*, (Monterey, CA), Nov. 2004.
20. "Some new adaptive protocols for the wireless relay channel," *Allerton Conf. on Commun., Control, and Comp.*, Monticello, IL, Oct. 3, 2003.
21. "Cooperative diversity using distributed turbo codes," *Virginia Tech Symp. on Wireless Personal Commun.*, Blacksburg, VA, June 6, 2003.
22. "Exploiting Macrodiversity in Dense Multihop Networks and Relay Channels," *IEEE Wireless Commun. & Networking Conf. (WCNC)*, New Orleans, LA, Mar. 20, 2003.
23. "Improving uplink performance by macrodiversity combining packets from adjacent access points," *IEEE Wireless Commun. & Networking Conf. (WCNC)*, New Orleans, LA, Mar. 19, 2003.
24. "Improving the QoS of Bluetooth Through Turbo Coding," *IEEE Military Commun. Conf. (MILCOM)*, Los Angeles, CA, Oct. 8, 2002.
25. "Custom coding, adaptive rate control, and distributed detection for Bluetooth," *IEEE Vehicular Tech. Conf. (VTC)*, Vancouver, BC, Sept. 26, 2002.
26. "An analog turbo decoder for an (8,4) product code," *IEEE Midwest Symp. on Circuits & Sys. (MWSCAS)*, Tulsa, OK, Aug. 7, 2002.
27. "Bridging the gap between parallel and serial concatenated codes," *Virginia Tech Symp. on Wireless Personal Commun.*, Blacksburg, VA, June 7, 2002.
28. "On the throughput of Bluetooth data transmissions," *IEEE Wireless Commun. & Networking Conf. (WCNC)*, (Orlando, FL), Mar. 18, 2002.
29. "Per-survivor based detection of DPSK modulated high rate turbo codes over Rayleigh fading channels," *Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 2001, invited presentation.
30. "An efficient software radio implementation of the UMTS turbo codec," *IEEE International Symp. on Personal, Indoor, and Mobile Radio Communications (PIMRC),* San Diego, CA, Oct. 2001.
31. "The impact of channel estimation errors on space time block codes," *Virginia Tech Symposium on Wireless Personal Communications*, Blacksburg, VA, June 2001.
32. "Coded transmit macrodiversity: Block space-time codes over distributed antennas," *IEEE Vehicular Technology Conference (VTC)*, Rhodes, Greece, May 2001.
33. "Hybrid ARQ using Serial Concatenated Convolutional Codes over Fading Channels" *IEEE Vehicular Technology Conference (VTC)*, Rhodes, Greece, May 2001.
34. "Inserting turbo code technology in the DVB satellite broadcasting system," *Military Communications International Symposium (MILCOM)*, Los Angeles, CA, Nov. 2000.
35. "Iterative channel estimation and decoding of turbo codes over flat-fading channels," *Wireless Communications and Networking Conference (WCNC),* Chicago, IL, Sept. 2000, invited presentation.

36. "An optimal soft-output multiuser detection algorithm and its applications," *Second International Symposium of Turbo Codes and Related Topics*, Brest, France, Sept. 2000.
37. "An ARQ technique using related parallel and serial concatenated convolutional codes," *Int. Conf. on Commun. (ICC)*, New Orleans, LA, June 2000.
38. "A bandwidth efficient pilot symbol technique for coherent detection of turbo codes over fading channels," *Military Communications International Symp. (MILCOM)*, Atlantic City, NJ, Nov. 1999.

**Poster Presentations**

1. "Multibiometric secure system based on deep learning," *poster presentation*, *IEEE Global Conf. on Signal and Information Processing (GlobalSIP)*, (Montreal, Canada), Nov. 2017.
2. "Interference correlation in fixed and finite networks," *poster presentation*, *2015 Communication Theory Workshop*, (Laguna Beach, CA), May 11, 2015.
3. "The role of computational outage in dense cloud-based centralized radio access networks," *poster presentation, IEEE Global Commun. Conf. (GLOBECOM)*, (Austin, TX), Dec. 2014
4. "A direct approach to spatial averaging: Revisiting Baccelli's Result," *poster presentation*, *2014 IEEE Communication Theory Workshop*, (Curacao), May 26, 2014.
5. "An information-theoretic approach to accelerated simulation of hybrid-ARQ systems," *poster presentation*, *IEEE Int. Conf. on Commun. (ICC)*, (Kyoto, Japan), June 2011.
6. "Optimum frame synchronization for preamble-less packet transmission of turbo codes," *poster presentation*, *Asilomar Conference on Signals, Systems, and Computers*, (Pacific Grove, CA), Nov. 2004.
7. "Scaling cooperative diversity to large networks," *poster presentation*, *NATO Workshop on Cross-Layer Issues in the Design of Tactical Mobile Ad Hoc Wireless Networks*, (US Naval Research Laboratory, Washington, DC), June 2-3, 2004.
8. "Iterative demodulation and decoding of DPSK modulated turbo codes over Rayleigh fading channels," *poster presentation*, *Virginia Tech Symposium on Wireless Personal Communications*, (Virginia Tech, Blacksburg, VA), June 2001.

## GRANTS AND CONTRACTS

**Awards Made to the Center for Identification Technology Research**
*Description: These are funds secured from the NSF and the CITeR Industrial Affiliates. The funds are used to operate the center and to fund research projects selected by the Affiliates.*

| Research Title | Granting Agency | Dates of Award | Agency Funding | Role |
|---|---|---|---|---|
| I/UCRC Phase II: I/UCRC for Identification Technology Research | National Science Foundation (and Federal Affiliate Members) | 3/15/2017 to 2/28/2025 | $4,306,813 | PI |
| CITeR Affiliation Membership: Athena Sciences Corporation | Athena Sciences Corporation | 11/1/2019 to 2/28/2025 | $35,000 | PI |
| CITeR Affiliation Membership: InCadence Membership | InCadence Strategic Solutions Corporation | 6/1/2017 to 2/28/2025 | $50,000 | PI |
| CITeR Affiliation Membership: FBI Membership | US Department of Justice: FBI | 3/15/2017 to 2/28/2025 | $510,000 | PI |
| CITeR Affiliation Membership: Northrop Grumman Corporation | Northrop Grumman Corporation | 6/1/2017 to 2/28/2025 | $170,000 | PI |
| CITeR Affiliation Membership: MorphoTrak | MorphoTrak (Idemia) | 6/1/2017 to 8/15/2025 | $40,000 | PI |
| CITeR Affiliation Membership: Stereovision Imaging, Inc. | Stereovision Imaging, Inc. | 1/1/2019 to 2/28/2025 | $50,000 | PI |
| Collaborative Research: I/UCRC for Identification Technology (CITeR) | National Science Foundation (and Affiliate Members) | 3/15/2011 to 2/28/2018 | $3,363,384 | PI |
| I/UCRC FRP: Collaborative Research: Enabling Biometrics Research in the Cloud: Design and Demonstration | National Science Foundation | 8/1/2013 to 7/31/2014 | $65,000 | Co-PI |

**Awards Made by the Center for Identification Technology Research**
*Description: These are research projects that were selected by the CITeR Industrial Affiliates Board to fund projects for which I was named as PI or co-PI (i.e., I was materially involved in the research).*

| Research Title | Granting Agency | Dates of Award | Agency Funding | Role |
|---|---|---|---|---|
| Uniqueness and Permanence of Iris | Center for Identification Technology Research | 8/14/2019 to 12/31/2020 | $25,000 | Co-PI |
| Deep Virtual Line-Up Using Soft Biometrics | Center for Identification Technology Research | 1/1/2019 to 12/31/2019 | $35,000 | PI |
| Deep Hashing for Secure Multimodal Biometrics | Center for Identification Technology Research | 1/1/2018 to 12/31/2018 | $50,000 | PI |
| A Forensic Approach to Iris Analysis | Center for Identification Technology Research | 8/16/2015 to 8/15/2016 | $20,000 | PI |
| A Cloud-based Biometric Service Model for Iris and Ocular Recognition Using a Smartphone | Center for Identification Technology Research | 1/2/2015 to 1/1/2016 | $29,000 | PI |
| Cloud-Empowered Mobile Biometrics | Center for Identification Technology Research | 4/15/2013 to 5/15/2014 | $34,400 | PI |

**Other Research Awards**

Description: These are awards made outside of the context of CITeR.

| Research Title | Granting Agency | Dates of Award | Agency Funding | Role |
|---|---|---|---|---|
| 2023 DoD Cybersecurity Scholarship Program | US DoD/NSA | 9/8/2023 to 12/7/2024 | $120,814 | PI |
| 2022 DoD Cybersecurity Scholarship Program | US DoD/NSA | 9/7/2022 to 9/7/2024 | $131,568 | PI |
| Strengthening Investigative Tools and Technology | WV DMAPS State Police | 10/1/2022 to 9/30/2024 | $138,253 | PI |
| Strengthening Investigative Tools and Technology | WV DMAPS State Police | 10/1/2021 to 9/30/2022 | $99,999 | PI |
| Survivable, Secure, and Dependable Wireless Communications | WPL, Inc. (Subcontract of phase II SBIR award from AFRL) | 1/1/2018 to 12/31/2019 | $124,650 | PI (Sole) |
| Iris Liveness Detection | MorphoTrak | 9/1/2016 to 8/31/2017 | $50,000 | PI |
| Intelligent Camera Networks for the Recognition of Human Activities in Urban Environments | Office of Naval Research | 9/3/2009 to 9/2/2013 | $604,505 | Co-PI |
| CRI: CRD: A Web-Accessible Grid-Computing Resource for the Telecommunications Research Community | National Science Foundation | 5/01/2008 to 4/30/2013 | $578,351 | PI (Sole) |
| Advanced Communications for Wireless Sensor Networks | US Army Research Laboratory | 9/29/2010 to 12/31/2012 | $2,720,000 | Co-PI |
| Radiation Hardened Interceptor Communications, Phase II. | Welkin Sciences, LLC (Subcontract of phase II STTR from MDA) | 6/15/2009 to 5/31/2011 | $225,000 | PI (Sole) |
| Initiatives in Computational-Based Discovery | WVU Research Corp. (PSCoR) | 1/7/2009 to 12/31/2009 | $28,784 | PI |
| Evolutionary Design of Near-Optimal Space Links | Parabon Computation (NASA subcontract) | 2/12/2007 to 2/28/2008 | $59,177 | PI (Sole) |
| Phase II of Development of a Concept for Swarmed mini-UAVs for Automatic Target Recognition | Augusta Systems (Subcontract of phase II STTR from US Navy) | 9/1/2005 to 8/31/2007 | $277,498 | PI |
| Retrieval and Reconstruction of Magnetic Data Using Scanning Probe Microscopy | Federal Government (classified agency) | 8/31/2004 to 8/30/2007 | $683,168 | Co-PI |
| Multiterminal Relaying Strategies | Welkin Sciences, LLC (Subcontract of phase I STTR award – MDA) | 10/1/2007 to 3/28/2007 | $30,000 | PI (Sole) |
| Proximity Based Protocols for Highly Mobile Large Scale Ad Hoc Networks | Augusta Systems (Subcontract of US Navy award) | 2/1/2006 to 12/31/2006 | $75,000 | PI |
| Improved Code and Receiver Design for IFICS | Xenotran (Subcontract of phase II SBIR award from MDA) | 4/15/2005 to 8/15/2006 | $87,585 | PI (Sole) |
| Efficient & Reusable Framework for Deep Space Mission Communication Applications | NASA | 7/1/2005 to 6/30/2006 | $20,000 | PI (Sole) |

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|---|---|---|---|---|
| Development of a Concept for Swarmed mini-UAVs for Automatic Target Recognition | Augusta Systems (Subcontract of phase I STTR award from ONR) | 7/1/2004 to 9/15/2005 | $42,000 | PI |
| Software Radio Architectures for Deep Space Communications | NASA | 7/1/2004 to 6/30/2005 | $20,000 | PI (Sole) |
| Advanced Packet-Based Communications: Turbo Coding, Synchronization, and Automatic Repeat Request | Office of Naval Research | 4/1/2000 to 6/30/2004 | $345,000 | PI (Sole) |
| Macrodiversity-Reception for the Wireless LAN Uplink: Feasibility Study and Application to IEEE 802.11a | Cisco Systems (University Research Program via WVU Foundation) | 1/1/2003 to 12/31/2003 | $39,900 | PI (Sole) |
| Integrated Computing, Communication and Distributed Control of Deregulated Electric Power Systems | Department of Energy (DOE EPSCoR) | 10/1/2000 to 9/30/2003 | $900,000 | Co-PI |
| Development of Modules for VisSim/Comm | Eritek, Inc. | 5/15/2001 to 12/31/2001 | $9,216 | PI (Sole) |
| Turbo Space-Time Codes for High Data Rate Wireless Communications | NASA | 5/15/2000 to 5/14/2001 | $13,333 | PI (Sole) |
| Turbo Code Consulting | Coleman Research Corporation (now L3) | 2/1/2000 to 7/31/2000 | $14,475 | PI (Sole) |

## PROFESSIONAL SERVICE

**Professional Membership**

**Fellow**, Institute of Electrical and Electronics Engineers
Student Member 1992, Member 1999, Senior Member 2007, Fellow 2018

**Member,** American Society for Engineering Education (ASEE) – 2015-2016, 2021-2022

**Member,** Electrical and Computer Engineering Department Head Association (ECEDHA) – 2019-2021

**Member**, Radio Club of America – 1999-present

**Member,** Phi Kappa Phi – 1991-present

**Member**, Eta Kappa Nu – 1990-present

**Professional Committees, Councils, and Boards**

**Member**, IEEE Communications Society Fellow Evaluation Committee – 2024-2025

**Member**, IEEE Communications Society Ad Hoc Committee on Diversity – 2021-2024

**Member**, IEEE Communication Theory Technical Committee (IEEE Comm. Society) – 2007-present
**Chair**, 2015-2016
**Vice Chair**, 2013-2014

**Member**, IEEE Communications Society Publication Misconduct Review Committee – 2022-2023

**Member**, IEEE Communications Society Governance Committee – 2019-2021

**Member**, IEEE Communications Society Conference Council – 2018-2021

**Member**, IEEE Communications Society Online Content Board – 2018-2021

**Member**, IEEE Communications Society Technical Committees Board – 2015-2016 and 2018-2021

**Journal Editorships and Leadership**

**Member, Steering Committee,** *IEEE Trans. on Wireless Commun.* – 2021-2024 (Chair 2023-2024)

**Senior Editor,** *IEEE Communications Society Best Readings* – 2022-present
**Editor-in-Chief,** *IEEE Communications Society Best Readings* – 2015-2022
Best Readings is an online repository of curated content. It publishes several issues per year, with each issue devoted to a particular technology. Examples include *Massive MIMO, Nanoscale Communication Networks, Cloud Communications and Networking,* and *Device-to-Device Communications.*

**Member,** *ECEDHA Source Editorial Committee* – 2020-2022
Shaped content in *the Source*, the newsletter for ECE department heads.

**Member, Executive Editorial Committee,** *IEEE Transactions on Wireless Communications,*
Member: 2014-2017. Chair: 2016-2017.
This committee assists the Editor-in-Chief with the screening of submissions, providing early reject decisions and assignment to Area Editors.

**Editor,** *IEEE Transactions on Communications* – 2013-2017

**Associate Editor,** *IEEE Wireless Communications Letters* – 2011-2014

**Associate Editor,** *IEEE Transactions on Wireless Communications* – 2007-2011

**Associate Editor**, *IEEE Transactions on Vehicular Technology* – 2003-2007

**Conference Organization and Leadership**

*IEEE Communications Society's GLOBECOM/ICC Technical Content (GITC) Committee*
**Chair –** 2018-2021
**Vice Chair –** 2016-2017
**Member –** 2015-2019
GITC is the (technical) steering committee for GLOBECOM and ICC, the flagship conferences on communication technology sponsored by the IEEE Communications Society.

*IEEE Communications Society's GLOBECOM/ICC Management & Strategy (GIMS) Committee*
**Member –** 2018-2021
This is the (non-technical) steering committee for GLOBECOM and ICC, the flagship conferences on communication technology sponsored by the IEEE Communications Society.

*IEEE Military Communications Conference (MILCOM) Board*
**Member (non-voting) –** 2014-2020
This is the steering committee for MILCOM, the flagship IEEE/AFCEA conference on military conference.

**Technical Program Chair,** *IEEE International Conference on Communications (ICC) 2024*, Denver, Colorado, June 2024

**Technical Program Co-Chair,** *IEEE International Conference on Communications (ICC) 2021*, Montreal, Canada, June 2021 (due to COVID-19, the conference was held online)

**Technical Program Chair,** *IEEE Military Communications Conference (MILCOM) 2017*, Baltimore, MD, Oct. 2017

**Unclassified Technical Program Chair,** *IEEE Military Communications Conference (MILCOM) 2016*, Baltimore, MD, Oct. 2016

**Technical Program Vice Chair,** *IEEE Military Communications Conference (MILCOM) 2015*, Tampa, FL, Oct. 2015

**Technical Program Vice Chair**, *IEEE Global Communications Conference (GLOBECOM) 2013*, Atlanta, GA, Dec. 2013

**Workshops Co-Chair,** *IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC) 2023,* Toronto, ON, Sept. 2023

**Member,** *IEEE MILCOM Technical Achievement Award Committee,* 2021-2023

**Awards Chair,** *IEEE International Conference on Communications (ICC) 2022*, Seoul, Korea, May 2022

**Workshop Co-Chair**, *4th International Workshop on 5G Architecture, 2017 International Conference on Communications (ICC) Workshops*, Paris, France, May 2017

**Track Co-Chair,** Waveforms and Signal Processing Track, *IEEE Military Communications Conference (MILCOM) 2021*, San Diego, CA, Nov. 2021

**Symposium Co-Chair,** Communication Theory Symposium, *IEEE International Conference on Communications (ICC) 2019,* Shanghai, China, June 2019

**Symposium Co-Chair,** Wireless Communications Symposium, *IEEE Global Communications Conference (GLOBECOM) 2015*, San Diego, CA, Dec. 2015

**Track Co-Chair,** Waveforms and Signal Processing Track, *IEEE Military Communications Conference (MILCOM) 2014*, San Diego, CA, Oct. 2014

**Track Co-Chair,** Waveforms and Signal Processing Track, *IEEE Military Communications Conference (MILCOM) 2012*, Orlando, FL, Oct./Nov. 2012

**Symposium Co-Chair,** Communication Theory Symposium, *IEEE International Conference on Communications (ICC) 2011,* Kyoto, Japan, June 2011

**Track Co-Chair,** Waveforms and Signal Processing Track, *IEEE Military Communications Conference (MILCOM) 2010*, San Jose, California, Oct./Nov. 2010

**Symposium Co-Chair,** Wireless Communications Symposium, *IEEE International Conference on Communications (ICC) 2009,* Dresden, Germany, May 2009

**Track Co-Chair,** Transmission Technologies, *IEEE Vehicular Technology Conference (VTC) Fall-2007*, Baltimore, MD, Oct. 2007

**Member, Technical Program Committee**, *IEEE Global Telecommunications Conference (GLOBECOM),* 2005-2023

**Member, Technical Program Committee**, *IEEE International Conference on Communications (ICC),* 2005, 2007-2009, 2012-2024

**Member, Technical Program Committee**, *IEEE International Conference on Computer Communications (INFOCOM) 2018,* Honolulu, HI, Apr. 2018. Distinguished TPC Member

**Member, Technical Program Committee**, *IEEE Wireless Communications & Networking Conference (WCNC),* 2006-2010, 2014, 2017, 2018

**Member, Technical Program Committee**, *IEEE Vehicular Technology Conference (VTC)*, 2012-2014

**Member, Technical Program Committee**, *IEEE Military Communications Conference (MILCOM),* 2004, 2005, 2010-2017, 2021-2023

**Member, Technical Program Committee**, *Wireless Telecommunications Symposium (WTS), 2015*

**Member, Technical Program Committee**, *7th International Symposium on Turbo Codes & Iterative Processing,* 2012

**Member, Technical Program Committee**, *European Wireless Conference, 2008*

**Member of Technical Program Committee**, Symposium on Cooperative Networks, *IEEE WirelessCom*, 2005

**Workshop Co-chair**, "Infrastructure and Applications for the Mobile Internet," *IEEE Int. Workshops on Enabling Technologies: Infrastructure for Collaborative Enterprises (WETICE)*, Cambridge, MA, June 2001

**Session Chair or Session Organizer**

**Session Chair,** "Energy Management Strategies," *IEEE Int. Symp. on Personal, Indoor, & Mobile Radio Commun. (PIMRC)*, (Bologna, Italy), Sept. 10, 2018.

**Session Organizer and Chair,** "5G Cellular Networks," *Asilomar Conference on Signals, Systems, and Computers*, (Pacific Grove, CA), Nov. 2015.

**Session Chair,** "Cooperative Communications," *IEEE Global Communications Conference (GLOBECOM)*, Austin, TX, Dec. 11, 2014.

**Session Chair**, "Cooperative Communications (session 1)," *IEEE Military Communications Conference (MILCOM),* (San Diego, CA), Nov. 18, 2013.

**Session Chair**, "Relay Channels II (session CT-11)," *IEEE International Conference on Communications (ICC*), (Budapest, Hungary), June 12, 2013.

**Session Chair,** "Cooperative Networks (session WSP-20)," *IEEE Military Communications Conference (MILCOM),* (San Jose, CA), Nov. 3, 2010.

**Session Chair and Organizer,** "Interference and Fading I (session U116)," *IEEE Military Communications Conference (MILCOM),* (Boston, MA), Oct. 20, 2009.

**Session Chair, "**CDMA (session WCS-19)," *IEEE International Conference on Communications (ICC*), (Dresden, Germany), June 16, 2009.

**Session Chair**, "Topics in Networking (session FA2)," *Conf. on Info. Sci. and Sys. (CISS)*, (Baltimore, MD), Mar. 2007.

**Session Chair**, "Modulation and Coding (session 4C)," *IEEE Vehicular Tech. Conf. (VTC)*, (Baltimore, MD), Oct. 2, 2007.

**Session Chair**, "Space-time Communication (session MCS-10)", *IEEE Military Communications Symposium (MILCOM*), (Orlando, FL), Oct. 31 2007.

**Session Organizer**, "Coding and Modulation for Noncoherent Channels," *IEEE Military Communications Symposium (MILCOM*), (Atlantic City, NJ), Nov. 2005.

**Session Chair**, "Phy 22: Space Time Codes I," *IEEE Wireless Communications & Networking Conference (WCNC) 2005,* (New Orleans, LA), Mar. 2005.

**Session Chair**, "Phy 23: Space Time Codes II," *IEEE Wireless Communications & Networking Conference (WCNC) 2005,* (New Orleans, LA), Mar. 2005.

**Session Organizer**, "Advanced Coding Techniques," *IEEE Military Communications Symposium (MILCOM*), (Monterey, CA), Nov. 2004.

**Session Chair and Organizer**, "FEC," *Asilomar Conference on Signals, Systems, and Computers*, (Pacific Grove, CA), Nov. 2004.

**Session Chair:** "Performance Analysis 8," *IEEE Vehicular Tech. Conf. (VTC)*, (Vancouver, BC), Sept. 2002.

**Session Chair and Organizer:** "High Data Rate Modulation and Coding Techniques," *IEEE Midwest Symposium on Circuits and Systems (MWSCAS)*, (Tulsa, OK), Aug. 2002.

**Reviewer/Panelist: Funding Agencies**

**National Research Foundation,** *Panelist and Reviewer for Enhanced Access to the Radio Spectrum (EARS) Program (2016), BigData Program (2015), CyberSEES Program (2014), Communications Research Program* (2002 and 2005), *Integrative, Hybrid and Complex Systems (IHCS) Program* (2007), *Communications and Information Foundations (CIF) Program* (2010 and 2012), *Accelerating Innovation Research (AIR) Program* (2011)*, Industry & University Cooperative Research Program (I/UCRC) Program* (2012, 2016, and 2018), *Spectrum Energy Efficiency, and Security (SpecEES) Program (2017),* and *CISE Community Research Infrastructure (CCRI)* (2021)

**Air Force Office of Scientific Research,** *Proposal reviewer for Dynamics & Controls Program, 2007*

**Army Research Office,** *Proposal reviewer for Wireless Communications and Networks program*, 2004, 2005, 2008, 2011, 2013, 2014, and 2017

**Tennessee EPSCoR State Committee,** *Reviewed Pre-Proposal for DoD EPSCoR Competition*, 2004

**Louisiana Board of Regents**, *Reviewed proposal for Pilot Funding for New Research Program*, 2016

**Reviewer: Publications**

**Journal Reviewer (IEEE Journals):** *IEEE Trans. on Aerospace and Electronic Systems, IEEE Communications Letters, IEEE Journal on Selected Areas of Communications, IEEE Signal Processing Letters, IEEE Trans. on Broadcasting, IEEE Trans. on Circuits and Systems, IEEE Trans. on Communications, IEEE Trans. on Education, IEEE Trans. on Information Theory, IEEE Trans. on Networking, IEEE Trans. on Mobile Computing, IEEE Trans. on Signal Processing, IEEE Trans. on Vehicular Tech., IEEE Trans. on Wireless Communications, IEEE Vehicular Technology Magazine, IEEE Wireless Communications Magazine, IEEE Trans. on Reliability.*

**Journal Reviewer (non-IEEE):** *ACM Mobile Communications Review, Arabian Journal of Science and Engineering, Applied Mathematics E-Notes, EURASIP Journal on Applied Signal Processing, IASTED International Journal of Computers and Applications (IASTED), IEE Electronics Letters, IEE Communications, Wireless Communications & Mobile Computing (Wiley)*

**Conference Reviewer:** *IEEE Global Communications Conference (GLOBECOM), IEEE Int. Conf. on Communications (ICC), IEEE Int. Symp. on Information Theory (ISIT), IEEE Int. Symp. on Information Theory and its Applications (ISITA), IEEE Int. Symp. on Personal, Indoor and Mobile Radio Communications (PIMRC), IEEE Int. Symp. on Spread Spectrum Techniques and Applications (ISSSTA), IEEE Int. Symp. on Wireless Communication Systems (ISWCS), IEEE Int. Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP), IEEE Int. Workshop on Signal Processing Advances in Wireless Communications (SPAWC), IEEE Military Communications Conf. (MILCOM), IEEE Vehicular Tech. Conf. (VTC), IEEE Wireless Commun. & Networking Conf. (WCNC), Int. Conf. on Commun. Systems (ICCS), Int. Symp. on Turbo Codes & Iterative Processing, Int. Symp. on Modeling & Optimization in Mobile, Ad Hoc, and Wireless Network.*

**Book and Book Proposal Reviewer:** *Cambridge University Press, Springer, Wiley & Sons,* and *Kluwer*

## INSTITUTIONAL SERVICE

### Service to the University

**Member,** WVU Board of Governors – 2017-2019

**Member,** WVU Faculty Senate – 2006-2009; 2012-2019; 2022-2025
**Secretary** – 2018-2019
**Chair** – 2017-2018
**Chair-elect** – 2016-2017

**Member,** WVU Faculty Senate Executive Committee – 2015-2019
**Chair** – 2017-2018

**Member,** Faculty Senate Curriculum Committee – 2012-2017
**Chair –** 2015-2017
**Chair-elect** – 2014-2015

**Member,** Faculty Senate Student Recruitment and Retention Committee– 2023-2024

**Member,** Faculty Senate Service Committee – 2022-2024

**Member,** Faculty Senate Committee on Committees – 2016-2019

**Member,** Faculty Senate Faculty Welfare Committee – 2016-2018

**Member,** Faculty Senate General Education Committee – 2016-2017

**Member,** Presidential Search Committee – 2014

**Member,** Faculty Senate Library Committee – 2005-2008
**Chair** – 2007-2008

**Member,** WVU Graduate Mentoring Awards Committee, 2022

**Member,** WVU Educational Responsibility Roundtable – 2012-2014
*Roundtable charged with developing a plan for meeting Goal 1 of WVU's Strategic Plan: "Engage undergraduate, graduate, and professional students in a challenging academic environment" and resulting in the development of the General Education Foundations (GEF)*

**Member,** Heebink Award Selection Committee – 2014-2016
*Award for distinguished service to the state of West Virginia*

**Member,** Committee to Conduct 5-year Review of the Dean of Libraries – 2008-2009

**Member**, Wireless Task Force – 2001-2002
*Charged to study the impact and implementation of a campus-wide wireless network*

**Associate Member**, Mountain Honorary – 2004-present

**Faculty Co-Advisor**, WVU Amateur Radio Club – 1999-present

## Service to the College

**Member,** Statler College Research Council – 2021-2023

**Member,** Statler Promotion and Tenure Committee – 2015-2019 and 2021-2024
**Chair** – 2017-2018 and 2022-2023

**Member,** Undergraduate Academic Affairs Committee, Statler College – 2010-2019
**Chair –** 2011-2014

**Member**, ABET Leadership Team, Statler College of Eng. & Mineral Res. – 2012-2015; 2018-2021
*Committee charged with preparing for 2015 and 2021 ABET visits.*

**Member**, Freshman Engineering Faculty Promotion Committee – 2013

**Member**, Outstanding Advisor Selection Committee, College of Eng. & Mineral Res. – 2010 and 2012

**Member**, Library Committee, College of Engineering and Mineral Resources – 2004-2008
**Chair** – 2006-2007

**Member**, Teaching Award Committee, College of Engineering and Mineral Resources – 2008 and 2022

## Service to the Department

**PoC**, National Center of Academic Excellence in Cybersecurity (NCAE-C) – 2023

**Faculty Advisor**, WVU chapter of Eta Kappa Nu (HKN), the EE honor society – 2002-2017

**Member**, CSEE Promotion and Tenure Committee – 2000-2002, 2005-2007, 2010-2012, and 2013-2015
**Chair –** 2014-2015

**Member**, CSEE Faculty Search Committee – 2001-2002, 2002-2003, and 2014-2015
**Chair –** 2014-2015

**Member,** EE Curriculum Committee – 1999-2023
**Chair** – 2010-2019

**Member,** CSEE Graduate Affairs Committee – 2010-2015

**Chair,** EE Graduate Curriculum Committee – 2007-2010

**Member**, CSEE Computer Systems Committee – 2004-2015
**Chair** – 2004-2006

**Chair**, Lane Fellowship Committee – 2000-2003

## STUDENTS ADVISED

**Completed Ph.D. Students (Doctoral Committee Chair)**

1. **Shi Cheng**, *Coded Continuous-phase FSK: Information Theoretic Limits and Receiver Design,* Nov. 12, 2007.
2. **Mohammad Fanaei**, *Distributed Detection and Estimation in Wireless Sensor Networks*, July 22, 2016.
3. **Terry Ferrett***, Receiver Design for Physical-Layer Network Coding in the Two-Way Relay Channel,* July 21, 2017.
4. **Enass Hriba,** *Analysis of Millimeter-Wave Networks: Blockage, Antenna Directivity, Macrodiversity, and Interference,* Oct. 14, 2021.
5. **Rohit Iyer Seshadri,** *Capacity-Based Parameter Optimization of Bandwidth Constrained CPM*, Aug. 31, 2007.
6. **Jian Sun**, *Synchronization for Capacity-Approaching Coded Systems*, Oct. 25, 2004.
7. **Salvatore Talarico**, *Role of Interference and Computational Complexity in Modern Wireless Networks: Analysis, Optimization and Design*, Sept. 10, 2015.
8. **Veeru Talreja,** *Integration of Deep Hashing and Channel Coding for Biometric Security and Biometric Retrieval, July 16, 2021.*
9. **Xingyu Xiang**, *Optimization of a Coded-Modulation System with Shaped Constellation*, Apr. 12, 2013.
10. **Bin Zhao**, *Multiterminal Relay Networks: Performance Bounds, Protocol Design, and Channel Coding Strategies*, Apr. 19, 2004.

**Completed M.S. Students (Thesis or Problem Report – Committee Chair)**

1. **Syed Amaar Ahmad,** *A Robust Hybrid-ARQ Protocol for Relay Networks*, Apr. 4, 2007.
2. **Naga Gopi Krishna Alapati,** *Green Cellular Networks: When Should a Base Station Be Turned Off?,* Dec. 2, 2015.
3. **Raneem Alghawi**, *Network Slicing in 5G: Admission, Scheduling, and Security*, July 20, 2022.
4. **Shaikha Alkandari**, *Air-Assisted Communications Using Line-of-Sight Links*, July 20, 2022.
5. **Deepthi Ancha**, *Implementation of Tail-Biting Convolutional Codes*, Nov. 7, 2008.
6. **Rahul Annareddy,** *Incentive Analysis of Blockchain Technology*, Nov. 18, 2022.
7. **Geetanjalee Athavale,** *Enabling Wireless Data Applications on Mobile Devices*, Oct. 28, 2002.
8. **Dirk Baker**, *Space-Time Block Coding with Imperfect Channel Estimates*, Apr. 10, 2001.
9. **Sri Lakshmi Balineni**, *Stochastic Geometry Analysis of a Class of Cooperative Relaying Protocols*, Apr. 18, 2017.
10. **Anupama Battula**, *Implementation of Extrinsic Information Transfer Charts*, Oct. 24, 2008.
11. **Aruna Sri Bommagani,** *Distributed Monte Carlo Simulation,* Nov. 3, 2011.
12. **David Buckingham**, *Information Outage Analysis of Finite-Length Codes*, Apr. 7, 2008.
13. **Anthony Carrola**, *Synthesizing Realistic Substitute Data for a Law Enforcement Database Using a Python Library*, April 15, 2022.
14. **Naveen Chandran**, *Hybrid ARQ with Parallel and Serial Concatenated Convolutional Codes for Next Generation Wireless Communications*, June 19, 2001.

15. **Sheetu Dasari**, *Implementation & Analysis of a Hybrid-ARQ Based Cooperative Diversity Protocol Using Reed-Solomon Codes*, Nov. 14, 2005.
16. **John Deal**, *Fractal Analysis of Fingerprints,* Nov. 12, 2007.
17. **Raghu Doppalapudi**, *Optimization of Bit Interleaved Coded Modulation Using Genetic Algorithms*, Oct. 20, 2008.
18. **Terry Ferrett**, *Data Recovery from Magnetic Media Using Magnetic Force Microscopy*, Apr. 25, 2008.
19. **Ramesh Gali,** *A Tool for the Statistical Analysis and Post-Processing of Distributed Sensor Network Data*, Mar. 31, 2003.
20. **Anusha Gangadi**, *Object-Oriented Implementation of LTE Turbo Codes*, Nov. 5, 2010.
21. **Timothy Gerkin,** *Implementation of LDPC Codes Using the IEEE 802.16e Standard*, Apr. 9, 2008.
22. **Tarik Ghanim**, *Analysis of Hybrid-ARQ Based Relaying Protocols under Modulation Constraints*, Apr. 26, 2006.
23. **Ruthika Gunda,** *Simulation of the Physical Link Layer of GSM,* July 8, 2004.
24. **Ramana Inturi**, *Implementing Test Automation with Selenium WebDriver,* Oct. 16, 2023.
25. **Sai Deepthi Katragunta,** *Simulation of the Performance of IEEE 802.16-2004 Fixed Broadband Wireless Access Technology,* Jan. 17, 2007.
26. **Raja Katuri**, *Efficient Simulation of Communication Systems on a Desktop Grid*, Aug. 25, 2006.
27. **Haranath Madineni,** *A Diagnostic Tool for Performance Assessment of Bluetooth Data Transmissions*, Dec. 4, 2003.
28. **Sushma Mamidipaka**, *Implementation of Block Turbo Codes from IEEE 802.16 Standard*, Oct. 27, 2008.
29. **Gopal Manchikanti**, *A Framework for Developing Wireless Applications*, May 1, 2001.
30. **Mamatha Mannava**, *Simulation of the Performance of IEEE 802.16-2004 Wireless MAN-OFDM PHY Layer*, Apr. 11, 2008.
31. **Sundara Ram Matta**, *Visualizing Outage Performance in Wireless Networks in the Presence of Rayleigh Fading,* Dec. 4, 2015.
32. **Brianna Maze**, *Analysis of Hamming and Bernard's Patent and the Bluetooth Standard,* Apr. 25, 2016.
33. **John Mazzie**, *Relay Communications Over Frequency-Selective Fading Channels*, Apr. 11, 2008.
34. **Lokesh Merupula,** *Simulation of IEEE 802.11a PHY Layer*, Sept. 9, 2004.
35. **Biju Naduvathuparambil**, *Telecommunications for a Deregulated Power Industry*, July 12, 2002.
36. **Chandana Nannapaneni**, *Constellation Shaping for Communication Channels with Quantized Outputs*, Nov. 11, 2010.
37. **Nisha Narasimhan,** *Data Synchronization for Bluetooth Networks*, Dec. 4, 2003.
38. **Senthil Ramamurthy,** *Multiple Quantum Filtered Localized Spectroscopy at 3T*, Apr. 14, 2004.
39. **Vasavi Rangammagari**, *Optical-Based ATR Algorithms for Applications in Swarmed UAVs*, Aug. 4, 2006.
40. **Guillaume Raux,** *Telecommunication of Stabilizing Signals in Power Systems*, Apr. 18, 2003.
41. **Sumit Sharma**, *Optimization of an iDEN Cellular Network*, Feb. 18, 2005.
42. **Yipeng Tang**, *DSP Implementation of Trellis Coded Modulation and Distributed Space Time Coding*, Jan. 25, 2001.

43. **Sujay Telang**, *Wireless Streaming Multimedia Applications,* Oct. 2, 2000.
44. **Srinivas Vemury**, *Comparison of Decoding Algorithms for LDPC Codes*, April 16, 2004.
45. **Kyle Whetzel**, *Complexity Aware C-RAN Scheduling for LDPC Codes over BEC,* Dec. 21, 2016.

**External Dissertation Examiner**

Served as an external examiner or committee member for the following Ph.D. students:

1. **Tiaza Thasthakeer,** University of Auckland (New Zealand), *Stochastic Geometry Approach on Modelling Finite Millimetre Wave Outdoor Cellular Networks*, July 19, 2021.
2. **Nadhiya Mohd Kamal**, University of Auckland (New Zealand), *Throughput Performance of Wireless Networks,* June 12, 2018.
3. **Kiran Venugopal**, University of Texas (Austin, TX), *Millimeter Wave Wearable Communication Networks*, May 11, 2017.
4. **Jing Guo**, Australian National University (Australia), *Stochastic Geometry for Modeling, Analysis and Design of Future Wireless Networks*, May 4, 2016.
5. **Saeed Khosravirad**, McGill University (Canada), *Performance Limits for Incremental Redundancy Hybrid Automatic Repeat Request (HARQ) over Fading Channel*, Mar. 23, 2015.
6. **Yicheng Lin,** University of Toronto (Canada), *Performance Analysis and Optimization of Wireless Heterogeneous Networks*, Nov. 12, 2014.
7. **L. Pujji**, University of Auckland (New Zealand), *Optimisation of Base Station Placement for Indoor Wireless Communications*, Dec. 2011.
8. **J.P.K. Chu**, University of Toronto (Canada), *Design and Analysis of Coded Cooperation in Relay Networks*, Oct. 30, 2009.
9. **J.K.L. Wong**, University of Auckland (New Zealand), *Automatic Planning and Optimization of In-Building CDMA Systems*, Oct. 2006.
10. **M. Flanagan**, University College, Dublin (Ireland), *Combined Equalization and Coding for Dispersive Communication Channels*, Apr. 4, 2005.

**Undergraduate Students**

*Faculty advisor for 15 completed senior design projects.*

*Supervised and supported undergrad researchers during summers of 2002, 2003, 2006, 2010, and 2013, including through the WVU Summer Undergraduate Research Experience (SURE) program.*

*Until 2018, was academic advisor to approximately 25 EE, CPE, and dual (CPE/EE and CPE/BIOM) majors per semester, including honors students (after that, advising became a College-level function).*

## INSTRUCTION

**Course Development**

Developed the following courses (Submitted new course proposals and shepherded through approval by the WVU Faculty Senate – permanent course numbers indicated):
*Engineering Professionalism Seminar // Engineering for Societal Impact (CSEE 380)*
*Wireless Networking (CPE 462)*
*Wireless Communication Systems (EE 562)*
*Coding Theory (EE 567)*

**Course Materials and Workbooks**

- M.C. Valenti, The Wireless Networking Workbook, 2013; revised 2018.
  *A 33-page companion for CPE 462 (Wireless Networking) initially used during the Fall 2013 semester.*

- M.C. Valenti, The Coding Theory Workbook, 2012; revised 2016.
  *A 56-page companion for EE 567 (Coding Theory) initially used during the Spring 2012 semester.*
- M.C. Valenti, The DSP Workbook, 2011.
  *A 113-page companion text for EE 463 used by Prof. Brian Woerner during the Spring 2011 semester and Prof. Reynolds during the Spring 2012 and 2013 semesters. An "instructor edition" was also created, which contains worked out exercises (which are blank in the student edition).*
- M.C. Valenti, Solutions Manual for the DSP Workbook, 2011.
  *A 63-page solutions manual for the end-of-chapter exercises.*
- M.C. Valenti, The Signals and Systems Workbook, 2002, revised 2005.
  *A 75-page companion text for EE 329 developed during the Spring 2002 semester and used since then by other faculty at WVU and by Prof. Anderson at the United States Naval Academy*
- M.C. Valenti, Solutions Manual for the Signals and Systems Workbook, 2002, revised 2005.
  *A 75-page solutions manual for the end-of-chapter exercises.*

**Undergraduate Courses Taught**

| Course Number | Title | Semester | Number of Students |
|---|---|---|---|
| BIOM 426 | Biometric Systems | Fall 2021 | 11 (team taught – 10%) |
| | | Fall 2020 | 11 (team taught – 10%) |
| CSEE 380 | Engineering Professionalism Seminar | Fall 2023 | 55 |
| | | Spring 2023 | 80 |
| | | Fall 2022 | 74 |
| | | Spring 2022 | 121 |
| | | Fall 2021 | 58 |
| | | Spring 2021 | 83 |
| EE 329 | Signals & Systems II | Spring 2005 | 43 |
| | | Spring 2004 | 63 |
| | | Spring 2002 | 38 |
| EE 461 | Introduction to Communication Systems | Fall 2002 | 44 |
| | | Fall 2001 | 36 |
| | | Fall 2000 | 14 |
| | | Fall 1999 | 16 |
| EE 463 | Digital Signal Processing Fundamentals | Spring 2010 | 25 |
| | | Spring 2009 | 34 |
| | | Spring 2008 | 35 |
| | | Spring 2007 | 44 |
| | | Spring 2006 | 36 |
| CPE 462 | Wireless Networking | Fall 2023 | 21 |
| | | Fall 2022 | 15 |
| | | Fall 2021 | 11 |
| | | Fall 2020 | 12 |
| | | Fall 2019 | 14 |
| | | Fall 2018 | 14 |
| | | Fall 2017 | 6 |
| | | Fall 2016 | 13 |
| | | Fall 2015 | 10 |
| | | Fall 2013 | 24 |
| | | Fall 2012 | 30 |
| | | Fall 2010 | 15 |
| | | Fall 2008 | 22 |
| | | Fall 2005 | 30 |
| | | Fall 2004 | 43 |
| | | Fall 2003 | 34 |
| | | Spring 2003 | 4 |

**Graduate Courses Taught**

| Course Number | Title | Semester | Number of Students |
|---|---|---|---|
| EE 513 | Stochastic Systems Theory | Fall 2014 | 33 |
| | | Fall 2011 | 27 |
| | | Fall 2009 | 35 |
| | | Fall 2006 | 63 |
| | | Fall 2004 | 51 |
| | | Fall 2002 | 39 |
| | | Fall 2001 | 27 |
| EE 561 | Communication Theory | Spring 2022 | 6 |
| | | Spring 2019 | 4 |
| | | Spring 2017 | 11 |
| | | Spring 2015 | 24 |
| | | Spring 2013 | 18 |
| | | Spring 2011 | 25 |
| | | Spring 2009 | 27 |
| | | Spring 2007 | 38 |
| | | Spring 2003 | 27 |
| | | Spring 2001 | 14 |
| | | Spring 2000 | 9 |
| EE 562 | Wireless Communication Systems | Fall 2007 | 8 |
| | | Fall 2000 | 14 |
| EE 567 | Coding Theory | Spring 2023 | 6 |
| | | Spring 2018 | 4 |
| | | Spring 2016 | 19 |
| | | Spring 2014 | 28 |
| | | Spring 2012 | 16 |
| | | Spring 2010 | 29 |
| | | Spring 2008 | 24 |
| | | Spring 2006 | 19 |
| | | Spring 2004 | 27 |
| CS/EE/CPE 796 | Graduate Seminar (1 credit hour) | Fall 2016 | 44 |
| | | Spring 2016 | 37 |
| | | Fall 2015 | 65 |
| | | Spring 2015 | 43 |
| | | Fall 2014 | 59 |
| | | Spring 2014 | 56 |
| | | Fall 2013 | 60 |
| | | Spring 2013 | 58 |
| | | Fall 2012 | 73 |
| | | Spring 2012 | 51 |
| | | Fall 2011 | 65 |
| | | Spring 2011 | 45 |
| | | Fall 2010 | 46 |
| | | Spring 2010 | 39 |
| | | Fall 2009 | 64 |
| | | Spring 2009 | 48 |
| | | Fall 2008 | 57 |
| | | Spring 2008 | 38 |
| | | Fall 2007 | 40 |
| | | Spring 2007 | 66 |
| | | Fall 2006 | 67 |
| | | Spring 2006 | 52 |
| | | Fall 2005 | 50 |
| | | Spring 2004 | 86 |
| | | Fall 2003 | 50 |
| | | Spring 2003 | 80 |

**Independent Study**

Led undergraduate and graduate students in the following asynchronous learning experiences:
*DSP Implementation of Communication Systems*
*Wireless Application Protocol*
*Wireless Networking*
*Wireless Communication Systems*