

# MATTHEW C. VALENTI

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## I. PROFESSIONAL BACKGROUND

### A. EDUCATION

#### Virginia Tech

**Ph.D., Electrical Engineering**, August 1999

**B.S., Electrical Engineering**, May 1992

#### Johns Hopkins University

**M.S., Electrical Engineering**, May 1995

### B. EMPLOYMENT AND APPOINTMENTS

**West Virginia University**, *Lane Department of Computer Science and Electrical Engineering*

**Professor**, 2010 to present

**Raymond J. Lane Department Chair**, July 1, 2020 to June 30, 2021

**Interim Chair**, July 1, 2019 to June 30, 2020

**Associate Professor**, 2005 to 2010

**Assistant Professor**, August 1999 to 2005

**Center for Identification Technology Research (CITeR)**, *an NSF I/UCRC*

**Director, WVU Site**, Aug. 2014 to present.

**Virginia Tech**, *Bradley Department of Electrical and Computer Engineering*

**Bradley Fellow, Graduate Research Assistant, and Instructor**, Aug. 1995-July 1999

**U.S. Naval Research Laboratory**, *Naval Center for Space Technology*

**Electronics Engineer**, Summer 1991, May 1992-August 1995

### C. HONORS AND AWARDS

**IEEE MILCOM Award for Sustained Technical Achievement (2019)**

**Fellow, Institute of Electrical and Electronics Engineers (IEEE)**

Student Member 1992, Member 1999, Senior Member 2007, Fellow 2018

**WVU Foundation Outstanding Teaching Award (2013)**

**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 and Mineral Resources*

**Bradley Fellow**, August 1995-May 1998

*Virginia Tech, Bradley Department of Electrical Engineering*

### D. PROFESSIONAL REGISTRATION

**Professional Engineer (P.E.)**

Registered in the state of West Virginia since 2011

## II. TECHNICAL CONSULTING BACKGROUND

### A. PATENT LITIGATION SUPPORT AND EXPERT WITNESS EXPERIENCE

1. Fish & Richardson for Dell Inc., and Dell Technologies, Inc.  
Dates: 2021  
Venue: United States Patent and Trademark Office  
Cases: Petition for *Inter Partes* Review (IPR) of US Patent No. 8,467,366 (held by Neo Wireless LLC)  
Technology: Wireless technology including OFDM transmissions and ranging signals  
Activity: Expert Declaration (in support of IPR Petition).
2. Kirkland & Ellis for Samsung  
Dates: 2021  
Venue: United States Patent and Trademark Office  
Cases: Petition for *Inter Partes* Review (IPR) of US Patent No. 8,023,990, US Patent No. 8,798,658, US Patent No. 9,277,436, and US Patent No. 10,476,722 (all held by Ericsson)  
Technology: Wireless technology including LTE-A minimization of drive testing (MDT) and 5G NR synchronization  
Activity: Expert Declarations (in support of IPR Petitions)
3. 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.
4. Fish & Richardson for LG  
Dates: 2019  
Venue: United States Patent and Trademark Office  
Cases: Petition for *Inter Partes* Review (IPR) of US Patent No. 7,039,435 (held by Bell Northern Research)  
Technology: Wireless technology including power control of wireless transmissions  
Activity: Expert Declaration (in support of IPR Petition).
5. Quinn Emanuel Urquhart & Sullivan for Samsung  
Dates: 2017-2019  
Venue: United States District Court; Northern District of California (San Francisco Division)  
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).

6. 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.*
7. 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).
8. 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).
9. 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).
10. 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; SidleyAustin 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).

11. 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).
12. 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).
13. 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).
14. 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).
15. 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).

## **B. TECHNICAL CONSULTING OF A NON-LEGAL NATURE OVER PAST TEN YEARS**

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

## **C. DESCRIPTION TECHNICAL AREA OF EXPERTISE**

Dr. Valenti's area of expertise is communication technology, with an emphasis on wireless and cellular networks. This includes physical-layer technology; i.e., modulation, error-control coding, and receiver design, as well as issues related to cellular network call processing (e.g., control signal formats and protocols). Dr. Valenti has a working knowledge of several current standards, including UMTS/WCDMA (3-G Cellular), LTE (4-G Cellular), 5G NR, WiMAX, and DVB-S2 (Satellite Television).

### III. RESEARCH

#### A. PUBLICATIONS

##### *Journal Papers*

- J1. 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.
- J2. 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.
- J3. 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.
- J4. 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.
- J5. 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.
- J6. 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.
- J7. 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.
- J8. 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.
- J9. 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.
- J10. **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.
- J11. 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.
- J12. 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.
- J13. 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.
- J14. 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.
- J15. **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.
- J16. **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.

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