BIOGRAPHY
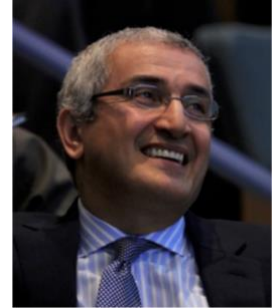**Behnaam Aazhang**
February 2023

Department of Electrical and Computer Engineering
Rice University
Houston, TX 77005-1892
Tel: (713)-348-4749
E-mail: aaz@rice.edu

Mobile: (832)-283-6874
http://aaz.rice.edu/
http://www.ece.rice.edu/
http://neuroengineering.rice.edu

Research Interests:

Signal and data processing, information theory, dynamical systems, data-driven closed loop control and their applications to neuro-engineering with focus areas in (i) understanding neuronal circuits connectivity and the impact of learning and socialization on connectivity (ii) developing minimally invasive and non-invasive real-time data-driven stimulation of neuronal systems to mitigate disorders such as epilepsy, Parkinson, depression, obesity, and mild traumatic brain injury (iii) developing a patient-specific multisite wireless monitoring and pacing system with temporal and spatial precision to restore the healthy function of a diseased heart, (iv) developing algorithms to detect, predict, and prevent security breaches in cloud computing and storage systems.

Education:

1986	Ph.D.	Electrical and Computer Engineering, University of Illinois, Urbana
1983	M.S.	Electrical and Computer Engineering, University of Illinois, Urbana
1981	B.S.	Electrical and Computer Engineering, University of Illinois, Urbana (Highest Honors)

Positions:

2018-present	Founding Director of Rice NeuroEngineering Initiative; a $75M investment in faculty and infrastructure to build a first-rate Neuroengineering Research Program at Rice in collaboration with the Texas Medical Center (TMC).
2001-present	J. S. Abercrombie Professor, Rice University
2017-2019	Director of NeuroX Steering Committee charged with fostering campus wide interdisciplinary educational and research activities in neuroscience and engineering.
2014-2017	Director of Center for Neuro-Engineering (CNE), a multi-university research cluster within Gulf Coast Consortium fostering collaboration among researchers and clinicians from Rice University, Baylor College of Medicine, University of Texas Health Sciences, and University of Houston. The center is focused on an emerging field intersecting neuroscience and engineering.

2006-2014	Academy of Finland Distinguished Visiting Professor (FiDiPro), University of Oulu, Center for Wireless Communication, Oulu, Finland
2004-2014	Chair of the Department of Electrical and Computer Engineering, Rice University (Department of 30 faculty, 45 staff, 150 graduate students, and over $12M annual external research funding)
2003	Visiting Professor, Nokia Mobile Phone, Nokia, Irving, Texas
1997	Founder and former Director of Center on Multimedia Communications, Rice University (Rice research center with 6 core faculty, 40 graduate students, 5 staff, and over $4M annual research expenditure)
1996, 2005	Guest Professor, Helsinki University of Technology, Helsinki, Finland
1995-2001	Professor, Rice University
1994, 2005	Guest Professor, University of Oulu, Oulu, Finland
1991-1993	Visiting Professor, ETH at Zurich, Switzerland
1990-1995	Associate Professor, Rice University
1989	Visiting Scientist, IBM Federal System Company
1985-1990	Assistant Professor, Rice University
1981-1985	Research Assistant, Coordinated Science Laboratory, University of Illinois

Membership on Advisory Boards:

2023-2025	Chair of the Advisory Board of Department of Material Science and Nano-Engineering, Rice University.
2022-2024	Chair of the Review Panel of School of Electrical and Information Engineering at The University of Sydney, Sydney, Australia
2019-2025	Board of Directors of Asilomar Conference on Systems, Signals, and Computers.
2018-2021	Scientific Advisory Board of Center for Wireless Communication (CWC) in University of Oulu, Finland
2016	External Review Committee for the Henry Samueli School of Engineering at the University of California at Irvine.
2014-2016	The University of Texas System Scientific Advisory Board for Neuroscience and Neuro-technology
2013-2019	Department of Electrical and Computer Engineering, Tufts University
2011-2017	Founding member of the executive committee for Center for Neuro-Engineering (CNE); a multi-university center fostering collaboration among researchers and clinicians from Rice University, Baylor College of Medicine, University of Texas Health Sciences, and University of Houston.
2011-2013	Information and Electronics Technology Laboratory, Beijing University of Posts and Telecommunications
2008-2013	Advisory board of Center for Wireless Intelligent Network (WINC), Nile University, Cairo, Egypt
2005-2013	Advisory board of SNRLabs, Richardson, Texas

Honors:

2022	Outstanding Doctoral Thesis Advisor Award, Rice George R. Brown School of Engineering

2019	SIGMOBILE Test of Time (ToT) award; recognizing outstanding papers that have had a lasting impact on the field of mobile computing. The paper titled "Design of WARP: a wireless open-access research platform".
2017	IEEE ComSoc CTTC Outstanding Technical Achievement Award "For consistent, fundamental contributions to multiuser communication theory for wireless networks"
2017	Honorary Doctorate degree from the University of Oulu, Finland (the highest honor that the university can bestow)
2016	IEEE ComSoc CTTC Outstanding Service Award "For innovative leadership that elevated the success of the Communication Theory Workshop"
2013	IEEE Communication Society Award for Advances in Communication
2012	Fellow of American Association for Advancement of Science (AAAS)
2005-2008	IEEE Communication Society Distinguished Lecturer
2004	IEEE Communication Society Stephen O. Rice Best Paper Award
2003	Listed in the Thomson-ISI Highly Cited Researchers
1999	Fellow of Institute for Electrical and Electronics Engineers (IEEE)
1993	Alcoa Foundation Grant Award
1987-89	National Science Foundation Engineering Initiation Award
1986-87	Magna Cum Laude (Rice University Teaching Award)
1984-85	IBM Graduate Fellowship
1981	Graduation with Highest Honors from University of Illinois
1981	Eta Kappa Nu and Tau Beta Pi Honor Societies

Professional Activities:

General Chair: *IEEE PIMRC Workshop on mmWave Networks—fundamental limits, protocols, and experimental research platforms,* Valencia, Spain September 2016, *IEEE International Symposium on Information Theory,* Austin, TX, June 2010, *IEEE Communication Theory Workshop*, Dorado, Puerto Rico, May 2006. *3rd Annual Texas Systems Day Symposium*, Nov. 18, 1989

Technical Program Chair: *IEEE Communication Theory Workshop (CTW),* Banff, Canada (May 2020), *Wireless Personal Multimedia Communication Symposium (WPMC)*, Lapland, Finland, (September, 2008), *Asilomar Conference on Signals, Systems, and Computers,* Monterey, CA, Nov. 6-9, 2005, *International Workshop on Convergent Technologies (IWCT),* Oulu, Finland, June 6-10, 2005, *Multi-Dimensional Mobile Communication Conference*, Pori, Finland, June 2001,

Editor: *IEEE Transactions on Molecular, Biological, and Multi-Scale Communications (MBMC)*, *KICS Journal of Communication and Network (JCN)* Special Issue on Cooperative Communication in 2007, *IEEE Journal on Selected Areas in Communication (JSAC)* Special Issue on Cooperation and Relay (December 2006), *IEEE Transactions on Communications*, 1993-1998 (Spread Spectrum Networks).

Publications Chair: *IEEE International Symposium on Information Theory*, San Antonio, TX, January 1993.
Commission Member: City of Houston, Mayor's Commission on Cellular Towers, 1998-2004.
Treasurer: *IEEE Information Theory Society*, 1996-1998.
Secretary: *IEEE Information Theory Society*, 1991-1993.

Research Grants and Contracts:

2022-2027	**NIH (UH3):** Network based neuromodulation for mesial temporal lobe epilepsy (PI Nitin Tandon at UT Health)
2021-2026	**DoD/Army/MTEC:** Translational technologies for detection and restoration of glymphatic flow (co-PIs G. Britz at Methodist Hospital and F. Shaib at BCM)
2021-2024	**CISCO Research Center:** Precursors of threats in networks: an approach based on graphical signal processing and information theory
2019-2023	**NIH (R01):** Leadless wirelessly powered pacemaker for multi chamber pacing using miniaturized pacing and sensing node (PI Mehdi Razavi THI BCM)
2018-2023	**NIH (NINDS):** Large-scale recording of population activity during social cognition in freely moving non-human primates (PI Valentin Dragoi UTHSC)
2018-2021	**NSF (SCH):** INT--Collaborative Research: Patient specific multisite pacing of diseased human hearts (co-PI Mehdi Razavi, THI BCM and Yingyan Lin)
2018-2024	**McNair Foundation:** Novel non-invasive neuro-stimulation treatments for neuropsychiatric disorders (PI Wayne Goodman at BCM)
2018-2021	**CISCO Research Center**: A machine learning pipeline for cross-Layer optimization in 802.11ax Networks.
2017-2021	**Dan L. Duncan Foundation:** Postdoctoral fellows in neuroengineering (with co-PIs Jacob Robinson and Caleb Kemere)
2015-2018	**NSF (ECCS):** Collaborative Research: Full-duplex cognitive radio: A new design paradigm for enhancing spectrum usage (co-PI Zhu Han at the University of Houston)
2015-2017	**UT System:** Developing integrated methods for analyzing brain circuits (PI John Byrne at UTHSC)
2015-2016	**Huawei:** Research cooperation on key technologies of MAC layer design in 5G high frequency system with unified architecture.
2015-2018	**NSF (NCS):** Micro-scale real-time decoding and closed-loop modulation of human language (co-PIs Aydin Babakhani and Nitin Tandon at UTHSC)
2015-2018	**NSF (NeTS Small):** Collaborative Research: A service centric architecture for efficient spectral utilization in wireless networks (co-PI Anthony Ephremides at Maryland)
2015-2020	**Helmsley Trust:** Vertically integrated projects (PI Ed Coyle at Georgia Tech)
2014-2017	**NSF (SCH):** Exploring sparsity and spectral-temporal decomposition in real-time network modulation for intractable epilepsy (co-PI Nitin Tandon at UTHSC)
2014-2019	**NSF (IGERT):** Neuroengineering: from cells to systems (PI Rob Raphael co-PI Dora Angelaki at Baylor College of Medicine)
2014-2017	**NSF (CIF Medium):** Interference-aware cooperation via structured codes: creating an empirical cycle (PI B. Nazer at BU and co-PI K. Narayanan at Texas A&M)
2013-2014	**Renesas Mobile:** A comprehensive study of wireless network systems: nonlinear RF power amplifiers, digital interference cancellation, and antennas

	and RF circuits for a full duplex transceiver Texas Instruments: emerging applications of distributed signal processing.
2011-2014	**Texas Instruments:** Advances in signal processing and embedded hardware
2010-2014	**NSF (NeTS Large):** Foundation for network cooperation at signal-scale (co-PI N. Shroff at Ohio State, M. Chiang at Princeton, and R. Calderbank at Duke)
2010-2013	**Renesas Mobile:** Algorithms and protocols for context aware wireless network
2010-2014	**Academy of Finland:** On cooperative and opportunistic wireless networks
2009-2013	**NSF (MRI):** Development of mobileWARP – A platform for next-generation wireless networks and mobile applications (PI A. Sabharwal)
2008-2014	**Tekes in Finland:** Flexible wireless communication systems
2008-2011	**NSF:** Cooperative wireless networks: from theory to urban-scale trials
2008-2010	**Texas Instruments:** New trends in distributed signal processing and networks
2006-2009	**NSF (CRI):** Wireless open-access research platform (WARP): A scalable and extensible testbed for high performance wireless systems (PI E. Knightly)
2006-2009	**Nokia**: Scalable mesh networks: algorithms, protocols, and their implementation
2003-2006	**State of Texas:** Enabling Technologies for developing wireless transit access points
2003-2008	**NSF (ITR):** Wireless transit access points–new foundations for a scalable, deployable, and high-performance wireless internet (PI E. Knightly)
2003-2006	**NSF (MRI):** Development of a national university wireless testbed: Rice configurable baseband architecture (co-PI)
2003-2006	**NSF:** High data rate wireless networks: a power efficiency perspective
2003-2006	**Nokia:** Algorithms for next generation high data rate wireless systems
2002-2005	**National Instruments:** Embedded systems for wireless communications (co-PI)
2002-2005	**NSF:** A comprehensive multi-tier wireless network development platform (co-PI)
2002-2008	**Texas Instruments:** New applications for DSP in multimedia information processing, networking and wireless communications: power aware wireless communications
2002-2005	**TI/Nokia:** A research platform for seamless wireless networks supporting multimedia applications
2001-2003	**State of Texas:** Development of an IEEE 802.11 platform to support delay sensitive applications in wireless LANs
2000-2002	**State of Texas:** Development of integrated multimedia wireless network (co-PI)
2000-2002	**State of Texas:** High speed wireless local area network
1999-2002	**NSF:** Seamless multitier wireless network for multimedia applications—NSF initiative on wireless information technology and networks
1999-2000	**Nokia:** High speed wireless LANs
1999-2002	**Texas Instruments:** New applications for DSPs in networking and integrated wireless sensors

1998-2001	**TI/Nokia:** Development of a testbed for wireless multiuser communication systems (co-PI)
1998-2002	**Nokia:** Signal processing applications in wireless multiuser communications
1998-1999	**State of Texas:** Development of multiuser transceivers for wireless CDMA
1998-1999	**State of Texas:** A framework for development of multimedia wireless networks (co-PI)
1997-1999	**NSF:** Design and evaluation of architectures, programming environments, and applications for shared memory systems (co-PI)
1996-1998	**State of Texas:** Advanced signal processing for multiuser wireless communications
1995-1999	**NSF:** Algorithms and architectures for channel estimation and multiuser detection in CDMA communication systems
1995-1998	**Nokia:** Signal Processing algorithms and architectures for CDMA systems
1995-1996	**Texas Instruments:** Research in parallel algorithms for CDMA communication systems (co-PI)
1994-1995	**Air Force:** Code division multiple access communications (Summer Faculty Program)
1994-1996	**GTE:** Studies of a CDMA spectral encoding method for multiuser optical networks
1994-1996	**BNR:** Importance sampling simulation of digital subscriber loops
1994-1997	**State of Texas:** Multiuser, terahertz capacity, optical communication networks
1993-1996	**NASA:** Code division multiple access communications for space applications
1992-1994	**IBM:** Discrete event dynamic systems: modeling, simulation, design and applications
1991-1994	**State of Texas**: Data driven modeling for the design and control of manufacturing processes
1989-1992	**IBM:** Neural networks and their applications to the space program
1989-1991	**State of Texas:** Multiple access optical communications using ultrashort laser pulses
1989-1993	**NASA:** Optical code division multiple access systems in space communications
1987-1990	**NSF:** Multi-user communications in non-Gaussian channels

Ph.D. Theses Supervised:

1. "Analyzing Brain Networks in Language and Social Tasks using Data-Driven Approaches" (2021) Sudha Yellapantula (currently with Medical Informatics Corporation)

2. "How to Group: from Time Series to Manifold" (2021) Romain Cosentino (currently a member of Technical Staff at Tenyx)

3. "Robust Beamforming for Ultrasound Neuromodulation Against Uncertainty in Tissue Sound Speed" (2021) Boqiang Fan (currently with Apple, San Diego, CA)

4. "Performance of Multi-tier mmWave Networks" (2021) Shuqiao (Nancy) Jia (currently with Apple, San Jose, CA).

5. "Addressing Indirect Functional Connectivity in Neuroscience via Graphical Information Theory: Causality and Coherence" (2020) Joseph Young (currently an Assistant Teaching Professor at Rice University).

6. "Data-Driven Optimizations for Downlink MU-MIMO with Client Mobility in WLAN Networks" (2020) Shi Su (currently with Microsoft, Seattle, WA).

7. "Practical Integer-Forcing Linear Receivers: from OFDM Signal Architecture to WARP Experimental Validation" (2018) Corina Ionita (currently with Xcerra; a Cohu company, Boston, MA).

8. "Inferring Spatiotemporal and Spectral Structure from Data and its Application to Epilepsy" (2017) Rakesh Malladi (currently with LinkedIn).

9. "Throughput Maximizing and Service Provisioning Strategies for Millimeter Wave Networks" (2017) David Ramirez (currently an member of technical staff at DoCoMo research center, Portland, OR).

10. "Low Complexity Lattice Codes for Practical Communication Networks" (2016) Nuwan Ferdinand at the University of Oulu (currently with Huawei in Canada).

11. "Engineering Deep Brain Stimulation as a Treatment for Parkinson's Disease: from Models to Materials" (2014) Samantha R. Santacruz (currently an Assistant Professor at the University of Texas in Austin).

12. "Cooperative Strategies for Near-Optimal Computation in Wireless Networks" (2012) Matthew Nokleby (currently a Principal Machine Learning Scientist at Best Buy).

13. "Efficient Resource Allocation in Multi-flow Wireless Network" (2011) Gareth B. Middleton (currently a Principal Data Scientist at Holland & Hart, LLP, Fort Collins, CO).

14. "Cooperative Communication over Two-Way Channels" (2008) Christopher B. Steger (currently with Netflix, CA).

15. "Codes for Relay Channels" (2007) Arnab Chakrabarti (currently with Hitachi America, CA).

16. "Performance Improvements in Feedback with Cooperative Relay Network" (2005) Nasir Ahmed (currently with Constellation Corporation, Philadelphia, PA).

17. "Distributed Cooperative Communications in Wireless Networks" (2004) Mohammad Ali Khojastepour (currently with NEC Laboratories, Princeton, NJ).

18. "Wideband Lowe Power Wireless Communications" (2004) Tarik Muharemovic (currently a Vice President at JP Morgan Investment, New York).

19. "Feedback in Multiple Antenna Wireless Systems: Bounds, Design Criterion, and Construction" (2003) Krishna Kiran Mukkavalli (currently with Qualcomm, San Diego, CA).

20. "Non-Coherent and Partially Coherent Communications over Multiple Antenna" (2003) M. Jaber Borran (currently with Google, CA).

21. "Power Efficient Transmission Policies for Multimedia Traffic over Wireless Channels" (2002) Dinesh Rajan (currently a Professor and Chair at Southern Methodist University).

22. "Signal and Information Processing for Wireless Communication Systems" (2001) Srikrishna Bhashyam (currently a Professor at IIT Madras, Chennai, India).

23. **"**Multiuser Information Processing in Wireless Communication" (2000) Suman Das (currently with Samsung, NJ) co-advisor.

24. **"**Algorithms and architectures for channel parameter estimation in wireless CDMA communication systems" (1999) by Chaitali Sengupta (Cirrus360, Richardson, TX) co-advisor.

25. "Advanced Diversity Techniques for Wireless Cellular Radio Systems" (1999) by Andrew Sendonaris (currently with Facebook, CA).

26. "Joint Source and Channel for Transmission of Images over Wireless Channels" (1999) by Jin Lu (currently with Broadcom Corporation).

27. "Resource Allocation and Admission Control for Wireless Multimedia Communications" (1999) by Yile Guo (currently at Renesas Mobile, Burlington, MA).

28. "Antenna Arrays for Wireless CDMA Communication Systems" (1997) by Raghu Madyastha (currently with Akamai Technologies, Boston, MA).

29. "Principle and Practice of Optical Code-Division Multiple Access Communications" (1996) by Lim Nguyen (currently a Professor at University of Nebraska-Lincoln at Omaha).

30. "Code Design and Multiuser Detection for CDMA Systems with Continuous Phase Modulation" (1996) by Aristides Papasakellariou (currently at Samsung, Dallas, TX).

31. "A Sample Realization Approach for Optimization of Code Division Multiple Access Systems" (1994) by Narayan B.T. Mandayam (currently a Professor and Chair at Rutgers University).

32. "High Throughput Optical Code Division Multiple Access Communication Systems", (1993) by Maite Brandt-Pearce (currently a Professor at University of Virginia).

33. "On the Capacity of Infinite Population Random Multiple Access Collision Channels", (1991) by Bernd-Peter Paris (currently an Associate Professor at George Mason University).

34. "Performance Evaluation and Optimization of Stochastic Systems via Importance Sampling", (1990) by Geoffrey C. Orsak (currently a consultant, formerly University of Tulsa President).

35. "Multistage Detection in Code Division Multiple Access Communications", (1989) by Mahesh K. Varanasi (currently a Professor at University of Colorado at Boulder).

Post-Doctoral Fellows and Visiting Scholars:

2021-2023	Jinane Harmouche
2014	Suganya Karunakaran (currently DSP Engineer at Element Science, co-advised)
2011	Gareth B. Middleton (currently with Holland & Hart, LLP)
2010	Esa Kunnari at University of Oulu (currently with Broadcom)
2010-2011	Anna Pentelidou at University of Oulu (currently with Broadcom)
2004	M. Jaber Borran (currently with Google, CA)
2002-2006	Alexander deBaynast (currently with Microsoft, Germany)
1999-2002	Ashutosh Sabharwal (currently a Professor and Chair at Rice University)
1998	Marco Lops (currently on the faculty at University of Naples)
1996-99	Elza Erkip (currently a Professor at NYU)
1996-99	Aria Nostratinia (currently a Professor at University of Texas at Dallas)
1996-1997	Akbar Sayeed (currently a Professor at University of Wisconsin, Madison)
1994-96	Venu Veeravalli (currently a Professor at University of Illinois at U-C)
1994-95	Markku Juntti (currently a Professor at University of Oulu, Oulu, Finland)
1993-94	Urs Fawer (currently with Trub AG, Zurich, Switzerland)

Current Ph.D. Students:

Fatima Ahsan, Dorsa E.P. Moghaddam, Anton Banta, Roy Phillips, Ananya Muguli. Elise Gibney, Arda Bayer, Aila Teimouri, Alireza Azizi

Patents:

1. ""Non-invasive, Portable Methods and Devices to Measure Cerebrospinal Fluid and Glymphatic Flows for the Diagnosis of Brain Pathophysiology" Gavin W. Britz, Anton Banta, Eugene Golanov, Roy Phillips, Angelique Regnier-Golanov, Raimondo D'Ambrosio, Behnaam Aazhang

2. "Minimally Invasive Deep Brain Stimulation using Electromagnetic Waves", Fatima Ahsan, Taiyun Chi, Raymond Cho, Sameer A. Sheth, Wayne Goodman, and Behnaam Aazhang

3. "A Transmission Method Based on Re-configurable Antenna Arrays", Shi Su, Lie Huang, Yi Wang, Behnaam Aazhang.

4. "A resource allocation method for robust transmissions in a multi-tier millimeter-wave network" Boqiang Fan, Lie Huang, Yi Wang, Behnaam Aazhang.

5. "Strategies to Develop a Multi-tier Millimeter-Wave Networks Robust to Blockage" Shuqiao Jia, Lie Huang, Yi Wang, Behnaam Aazhang.

6. "Fair Power Allocation Methodology for Cooperative Cellular Communications", Matthew Nokleby, Behnaam Aazhang, *NC69647*, 2009.

7. "A Novel Adaptive Beamforming Codebook for Limited Feedback in MIMO Systems", Davood Shamsi, Kiarash Amiri, Behnaam Aazhang, Joseph Cavallaro, Jorma Lilleberg (2007).

8. "Quantizer-Design Technique for Half-Duplex Estimate-and-Forward Relaying," Arnab Chakrabarti, Ashutosh Sabharwal, Behnaam Aazhang (2007).

9. "Variable Rate Soft Information Forwarding," Arnab Chakrabarti, Alexandre de Baynast, Ashutosh Sabharwal, Behnaam Aazhang (2007).

10. "LDPC Code Design for Half-Duplex Decode-And-Forward Relaying," Arnab Chakrabarti, Alexandre de Baynast, Ashutosh Sabharwal, and Behnaam Aazhang (2007).

11. "Ordered ARQ for Multicarrier Systems" Mohammad. J. Borran, Behnaam Aazhang, Pramod Varshney (2005).

12. "On Power Control for Cooperative Relay Network" by Nasir Ahmed, Mohammad Ali Khojastepour, Ashutosh Sabharwal, and Behnaam Aazhang (2004 NC 44098).

13. "Fixed Point Implementation of LMMSE Equalizer for Multiuser MIMO System Based on CG Algorithm and Vectorial Covariance Matrix Estimation" by Predrag Radosavljevic, Alexandre de Baynast, Joseph Cavallaro, and Behnaam Aazhang (2004 NC 17731).

14. "A Generalized m-rank Beamformer, Using Successive Quantization Idea," by Krishna Kiran Mukkavilli, Ashutosh Sabharwal, and Behnaam Aazhang (2004 NC 17733).

15. "Partially Coherent Constellations for Multiple Antenna Systems" by Mohammad Jaber Borran, Ashutosh Sabharwal, Behnaam Aazhang and Prabodh Varshney (2004 C25742).

16. "Coded Modulation for Partially Coherent Systems" by Mohammad Jaber Borran and Behnaam Aazhang (2003 NCD17675).

17. "Method and Apparatus for Providing Differential Multistage Detection in the Reverse Link of a Code Division Multiple Access Communication System" by Gang Xu, Joseph Cavallaro and Behnaam Aazhang (1998 Chinese Patent granted CN1310888T European Patent granted EP1101290 US Patent 6529495).

18. "System and Method for Performing Optical Code Division Multiple Access Communication Using Bipolar Codes" by Lim Nguyen, Behnaam Aazhang, James F. Young (1996).

Consulting:

2015	Odyssey Wireless (consultant for McKool Smith in Austin)
2014	Fairfields (consultant for Foley and Lardner in Boston)
2014	T-mobile (consultant for McKool Smith in Austin)
2014	Samsung (consultant for O'Melveny & Myers LLP in Los Angeles)
2013	MOSAID (consultant for McKool Smith in Austin)
2010	Wi-LAN (consultant for Vinson and Elkin in Austin)
2007	Marvell (counsel for Klarquist Sparkman LLP in Portland)
2006	Qualcomm (counsel for Howrey LLP in Houston)
2005-07	LG Inc. (counsel for Fish and Richardson in Washington D.C.)
2004	City of Houston, TX (counsel for Vinson and Elkins in Houston)
2002	Lockheed-Martin (counsel for Burns and Associates in Houston)
1999	ETRI, Korea (counsel for Crosby, Heafey, Roach and May in San Fransisco)
1998-99	City of Houston, TX (counsel for Vinson and Elkins in Houston)
1997	WorldCom, Houston, TX (counsel for Arnold, White and Durkee in Houston)
1996-97	Rockwell International, Los Angeles, CA (counsel for Arnold, White and Durkee)
1995-2000	Nokia Research Center, Helsinki, Finland
1994-96	Research and Development Laboratory (RDL), Inc., Los Angles, CA
1989-93	IBM Federal System Company, Houston, TX
1988-89	Startek International Corp., Houston, TX

Teaching:

Undergraduate:	Learning from Sensor Data, Communication Theory and Systems, Communication Systems Laboratory (developed a new hands-on educational laboratory for digital communications)
Graduate:	Wireless Communications, Random Processes, Detection and Estimation Theory, Information and Coding Theory, Spread Spectrum Communication Systems, Topics in Multiple Access Communications
Short Courses:	1. Learning from Sensor Data (at University of Oulu and Sharif University of Technology). 2. Cooperative Communications: Theoretical Overview and Fundamentals Techniques (at Helsinki University of Technology, Helsinki, Finland, at University of Oulu, Oulu, Finland, and at Samsung Corporation, Suwan, South Korea) 3. Understanding Wireless Networks: Coding, Scheduling, Fairness and Resource Allocation (at Helsinki University of Technology, Helsinki, Finland) 4. Wireless Communications: A Power Efficiency Perspective (at the University of Oulu, Oulu, Finland, CIC '2002 in Seoul, Korea, and at Helsinki University of Technology, Helsinki, Finland) 5. Architecture and Signal Processing Algorithms for CDMA Systems (at Nokia Research Center, Helsinki, Finland and Nokia Mobile Phones, San Diego, CA) 6. Applications of Signal Processing in CDMA Communications (at the University of Oulu, Oulu, Finland)

Theses:	Supervised 40 M.S. theses and 35 Ph.D. dissertations.

University Services:

2022-2023	Member of Advisory Board of Material Science and Nano-Engineering (MSNE) Department at Rice
2016-2022	Steering Committee of Rice Institute for Biosciences and Bioengineering (IBB)
2016-2017	Dean's Search Committee
2011-2014	Member of Dean's Council
2010-2011	Member of Rice University Senate's Committee on Research
2004-2014	Chair of the Department of Electrical and Computer Engineering
1997-98	Member of the School of Engineering Dean Search Committee
1996-99	Member of the Steering Committee, Computer and Information Technology Institute (CITI)
1996-98	Chairman of the ECE Industrial Affiliates Committee
1996-97	Member of Undergraduate Admissions Committee
1995-97	Chairman of the ECE System Group
1990-91	Member of Undergraduate Admissions Committee
1990-94	Chairman of the ECE Graduate Committee
1988-present	Member of Computer and Information Technology Institute
1987-92	Elected to the Rice University Faculty Council
1986	Offered a Rice University Course at Texas Instruments, Houston, TX
1986-1991	Faculty Associate and Divisional Advisor of Lovett Residential College
1986-1991	Faculty Advisor to Eta Kappa Nu Honor Society

Personal:

Born 12/7/57; Married with four children, U.S. Citizen

Journal Publications:

Over 400 journal and conference publications with over 28,000 citations; h-index of 58; 39 papers each with over 100 citations; 4 papers with over 1000 citations.

For a complete list of publications (journals and conference papers) and for downloading papers please visit http://scholar.google.com/citations?user=LalqwaAAAAAJ&hl=en

1. D. E.P. Moghaddam∗, A. Banta, A. Post, M. Razavi, and B. Aazhang "Reconstructing 12-lead Surface Electrocardiogram from Reduced Lead Sets: An Encoder-Decoder Convolutional Neural Network Approach" submitted to *Artificial Intelligence in Medicine,* December 2023.

2. Z. Haneef, K. Yang, S. A. Sheth, F. Z. Aloor, B. Aazhang, K. Yang, V. Krishnan, C. Karakas, "Sub-Scalp Electroencephalography: A Next Generation Technique to Study Human Neurophysiology", in *Clinical Neurophysiology*, 18 July 2022
https://doi.org/10.1016/j.clinph.2022.07.003

3. J. Hellar, R. Cosentino, M. M. John, A. Post, S. Buchan, M. Razavi, and B. Aazhang "Manifold Approximating Graph Interpolation of Cardiac Local Activation Time" *IEEE Transactions on Biomedical Engineering*, https://ieeexplore.ieee.org/document/9755048 April 11, 2022 doi: 10.1109/TBME.2022.3166447

4. D.E.P. Moghaddam, S. A. Sheth, Z. Haneef, J. Gavvala, and B. Aazhang (2022) "Epileptic Seizure Prediction Using Spectral Width of The Covariance Matrix" *Journal of Neural Engineering*, https://doi.org/10.1088/1741-2552/ac6063

5. S. Jia and B. Aazhang (2020) "Reversing the Curse of Densification in mmWave Networks Through Spatial Multiplexing" submitted to *IEEE Transactions on Wireless Communications*.

6. B. Fan, W. Goodman, R. Y. Cho, S. A. Sheth, R. R. Bouchard, and B. Aazhang (2023) "On Development of Beamforming with High Spatial Resolution in Low-Intensity Focused Ultrasound Neuromodulation" submitted to *Nature Scientific Report*.

7. F. Ahsan, T. Chi, R. Cho, S. A. Sheth, W. Goodman, and B. Aazhang (2022) "EMvelop Stimulation: Minimally Invasive Deep Brain Stimulation using Temporally Interfering Electromagnetic Waves" *Journal of Neural Engineering,* https://doi.org/10.1088/1741-2552/ac7894

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