Sumit Roy, Fellow IEEE

Curriculum Vitae

University of Washington
Dept. of Electrical Engineering
Univ. of Washington, Box 352500
Seattle, WA 98195

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EDUCATION

Degree	*Institution*	*Year*
Ph.D. Electrical Engineering	University of California, Santa Barbara	1988
M. A. Statistics & Appl. Probability	University of California, Santa Barbara	1988
M. S. Electrical Engineering	University of California, Santa Barbara	1985
B. Tech. Electrical Engineering	Indian Institute of Technology, Kanpur	1983

PERSONAL

Date & Place of Birth: Nov. 17, 1960; Kolkata, India.

Married; U. S. Citizen.

EMPLOYMENT

9/20-8/22	**Program Lead**, Innovate Beyond 5G, 5G-to-xG Initiative, US DoD (OUSD R&E)
9/02 - present	Prof. (with tenure), Dept. of Electrical Engineering Univ. of Washington, Seattle *Assoc. Chair for Research*, Sep. 2005-07, Sep. 08 - 11
9/98 - 9/02	Assoc. Prof. (with tenure), Dept. of Electrical Engineering Univ. of Washington, Seattle
1/95 - 8/98	Assoc. Professor (with tenure), Division of Engineering University of Texas at San Antonio
7/88 - 12/94	Asst. Professor, Dept. of Electrical Engineering University of Pennsylvania
10/83 - 5/ 88	Research Assistant, Dept. of Electrical & Computer Engineering University of California at Santa Barbara M. S. Thesis: "Target Signature Evaluation Based on Radar Turntable Data" Ph. D. Diss.: "Estimation Strategies for a Network of Distributed Sensors"

OTHER SIGNIFICANT PROFESSIONAL EXPERIENCE

Dec. 2014-Feb. 2015	Visiting Research Scientist, Microsoft Research, Bangalore, India
Aug-Dec. 2014	Visiting Faculty and External Consultant; IIIT-Delhi, India
Sep. 2001 - Dec. 2003	Sr. Staff Researcher, Wireless Technology, Intel Labs, Hillsboro, OR
Summer 1996	Visiting Member of Technical Staff, Center for Wireless Communications National Univ. of Singapore
Summer 1989	Visiting Researcher, GE Corporate R & D Center, Schenectady, NY

RESEARCH INTERESTS

• Analysis, Evaluation & Prototyping of Wireless Communication Systems/Networks

• Emerging Networks: Beyond 5G (mobile cellular, satellite and WiFi), Internet of Things, Autonomous and Software-Defined Networks

Petitioners' Exhibit 1003
Ericsson Inc., et al. v. KT Corporation, et al.
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PROFESSIONAL HONORS & RECOGNITIONS

NATO STO SET-302 Technical Panel	US National Representative (Cognitive Radar)
U. Washington Term Professor	Integrated Systems Professor, 2014 - 19
Fellow, IEEE	Communications Society (2007)
Science Foundation of Ireland	E.T.S. Walton Visiting Faculty Award (Feb.-July 2008)
Royal Acad. Engineering (UK)	Distinguished Visiting Fellow (summer 2011)
Best Student Paper Award	L. Bai, S. Roy and M. Rangaswamy, "Compressive Radar Clutter Subspace Estimation using Dictionary Learning," *IEEE Radarcon*, Ottawa, CA, May 2013.
Best Paper Awards	F. Hessar and S. Roy, "Spectrum Sharing Between a Surveillance Radar and Secondary Wi-Fi Networks," *IEEE Trans. Aerosp. & Elect. Systems* **B. Carlton Best Paper Award**, 2016. R. Patidar, S. Roy, T. R. Henderson and A. Chandramohan "Link-to-System Mapping for ns-3 Wi-Fi OFDM Error Models," *ns-3 Workshop* **Best Paper Award**, Jun 2017.
Distinguished Lecturer	IEEE Communications Society, 2014-15, 2017-18
Visiting Erskine Fellow	Univ. of Canterbury, Christchurch, New Zealand (2015)
High-end Foreign Expert	Shanghai JiaoTung University (1 month/year, 2014 - 16)
Member, Executive Comm. (elected)	National Spectrum Consortium, 2018-19

PROFESSIONAL ACTIVITIES

IEEE ComSoc Activities	Member of Technical Comm. on Cognitive Radios and Commn. Theory Numerous Technical Program Comm. Memberships (Globecom, ICC)
Proposal Reviewer	NSF, U.S. Dept. of Defense, Hong Kong Research Council IEEE Trans. Communications, Wireless Commn. J. Select. Areas in Commn., Vehicular Tech.; Trans. Networking
Editorial Duties	IEEE Trans. Communications 1996 - 99, 2009-2012 IEEE JSAC Wireless/Trans. Wireless Commn. 1999 - 2003 Wireless Communications & Mobile Computing J. (Wiley), 2003-08 IEEE Trans. Mobile Comput., 2006-07 IEEE Trans. Intelligent Transp. Syst.,2006 - 2011 IEEE Trans. Smart Grid, 2010-2012 IEEE Trans. Circuits & Syst. II, 2014-2015 Guest Editor, J. Sel. Areas Commn. Spl. Series on Smart Grid, July 2014

OTHER RECOGNITIONS

- University of California Regents Fellowship (1983-84)
- University of California Dissertation Fellowship (1987-88)
- External Dissertation Reviewer (McGill Univ., Montreal; National Univ. of Singapore; U. Victoria; SIIT, Bangkok)
- Referee for Promotion Cases (CMU, U. Minnesota, North Carolina State U., U. Arizona, U. Utah, Iowa State, U. Texas Dallas)

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TEACHING

U. Pennsylvania	Commun. Systems (Theory and Lab)	3/4th Yr. Undergrad
	Advanced Digital Signal Processing	2nd Yr. Grad.
	Digital Communications	2nd Yr. Grad.
	Radar Systems	2nd Yr. Grad.
U. Texas San Antonio	Found. of Commun. Theory	1st Yr. Grad.
	Random Signal Analysis	1st Yr. Grad.
	Linear Systems	3rd Yr. Undergrad
	Mobile Communications	2nd Yr. Grad.
U. Washington	Wireless Networks	2nd Yr. Grad.
	Random Processes	1st Yr. Grad.
	Stochastic Process	2nd Yr. Grad
	Digital Communications	2nd Yr. Grad.
	Capstone Design in Communications Systems	4th Yr. Undergrad
	Computer Networks	4th Yr. Undergrad
	Signals & Systems	3rd Yr. Undergrad

PATENTS

1. "A System to Cancel Ghosts in NTSC Television Transmission", (with J. Yang and C. B. Patel) U.S. Patent No. 5361102, Nov. 1994.
2. "Improved Deghosting for Multipath Transmission of TV Signals," (with J. Yang and C. B. Patel), U.S. Patent No. 5341177, Aug. 1994.
3. "Time Frequency Coding in a Multi-Band UWB System," (with J. R. Foerster and V.S. Somayazulu, Intel Corpn.), U.S. Patent No. 7613223, Nov. 2009.
4. "Apparatus and Associated Methods to Introduce Diversity in a MultiCarrier Channel," (with L. Shao and S. Sandhu), U.S. Patent No. 7782970, Aug. 2010; U.S. Patent 8289836, Oct. 2012.
5. "Achieving Quality of Service in a Wireless Local Area Network," (with R. Gupta), U.S. Patent No. 8144613, Mar. 2012.
6. "Adaptive Uplink Protocol" (with Y-C. Ko), U.S. Patent No. 8223664, July 2012.
7. "Method, Apparatus and Computer Program Product for Quiet Period Management in Wireless Networks for Co-existence," (with Chittabrata Ghosh and Klaus Doppler), U.S. Patent No. 0070605, Mar. 2013.
8. "Efficient Broadcasting via Random Linear Combining," (with H. Liu and M. Hamed Firooz) U.S. Patent No. 8953612, Feb. 2015.
9. "Sensing and/or Transmission Coverage Adaptation Using Interference Information," (with H. Ali Safavi-Naeni, Chittabrata Ghosh, Klaus Doppler and Sayantan Chowdhury), U.S. Patent No. 9510369, Nov. 2016.
10. "Enhanced Communication Infrastructure for Hierarchical Intelligent Power Distribution Grid," (with E. Boardman and S. S. Venkata), US Patent 9641026, May 2017.

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RESEARCH SUPERVISION

- **Ph.D. Dissertations Completed**

J. Yang	"Signal Processing for Multi-user Communications" (UPenn, May 1993)
J. S. Stadler	"Contributions to the Theory and Practice of Importance Sampling" (UPenn, Jul
P. S. Kumar	"Interference Cancellation with Applications to Mobile Radio and Magnetic Recording Systems" (UPenn, Sep. 1993)
B. Jelicic	"Channel Coding for Non Additive White Gaussian Noise Environments" (UPenn, July 1995)
M. P. Wylie	"Contributions to Spatio-temporal Processing" (UPenn, Aug. 1995)
L. A. Baccala	"Data Unaided Identification of Linear Communication Channels by Time-domain Methods" (UPenn, Dec. 1995)
A. Abouzeid	"Stochastic Models of Congestion Control in Heterogeneous Next Generation Packet Networks" (UW, July 2001)
C. Li	"Parameter Estimation in OFDM Systems for High Rate Wireless Communicatio (UW, Sep. 2002)
H. Yan	"Parameter Estimation and Receiver Design for Overlay Communication Systems' (UW, Nov. 2002)
J. Zhu	"Layer 2 Performance Analysis and Improvement for Wireless Heterogeneous Networks" (UW, Sep. 2004)
L. Shao	"Code Design for MIMO-OFDM/OFDMA Systems" (UW, Oct. 2004)
R. Iyappan	"Joint PHY-MAC Optimization for Energy Constrained Wireless Networks" (UW, Nov. 2006)
H. Ma	"Adaptive Network Management for 802.11 Wireless LANs" (UW, Sep. 08)
R. Gupta	"PHY/MAC Cooperation Strategies for High Density Wireless Networks" (UW, Dec. 2009)
L. Luo	"Modeling and Optimization of Dynamic Spectrum Access" (UW, Dec. 2010)
F. Ye	"System Optimization and Protocol Design for Vehicular Networks" (UW, Mar. 2011)
Mohammad Hamed Firooz	"Application of Network Coding and Compressed Sensing in Networking," (UW, May 2013)
Linda Bai	"Compressive Detection & Estimation with Applications to Cognitive Radio/Rad (UW, June 2013)
C. S. Boyer	"RFID: A Communication System Perspective," (UW, Mar. 2014).
A. Al-mutairi	"Distributed Multiple Access for OFDMA Femto-cells," (UW, Jun. 2014)
Farzad Hessar	"Spectrum Sharing in White Spaces" (UW, Apr. 2015)
Yue Yang	"Contributions to Smart Metering: Protocol Design & Data Analytics," (UW, Jun. 2015)
S. Ashrafi	"Random Access Communications over Multi-packet Reception Channels" (UW, Jun 2016)
H.-Ali Safavi-Naeni	"Heterogeneous Coexistence of Wireless Systems" (UW, July 2016)

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Xuhang Ying (co supervisor)	"Crowdsensing & Resource Allocation in Shared Spectrum" (UW, Ph.D. Jun. 2018)
Sian Jin	"Vehicular Radar Network: Cross-Layer Design Optimization" (UW, Ph.D. Mar. 2022)
L. Zhang	"Optimized Resource Allocation in Mobile Edge Communication, 5G data multiplexing and WiFi Channel Access" (UW, Ph.D. Jun. 2023)
H. Yin	"Towards Low Latency & Ultra Reliable Services in Wireless Communications (UW, Ph.D., July 2023)
Collin Brady	"Cross-Layer Optimization for Off-network Public Safetey Communications in 4G LTE and 5G NR" (UW, Ph.D. July 2023)
X. Gao	"Efficient and Enhanced Radar Perception for Autonomous Driving" (UW, Ph.D. Aug. 2023)

- **M. S. Theses Completed**

L. I. Ou	"Fault Detection Algorithms" (UPenn, Dec. 1990)
K. Gang	"Real-time Adaptive Nulling in Presence of Array Imperfections" (UPenn, May 1991)
H.-Y. Wang	"Performance Analysis of Aloha Multiple Access with Multi-user Detection" (U. Texas, Sep. 1998)
M. Albuquerque	"Effects of Asymmetry, Link Losses and Packet Sizing on Performance of a TCP Reno Connection" (UW, Mar. 2001)
P. Lu	"Performance Analysis of Bluetooth MAC with Priority Scheduling," (UW, Mar. 2002)
M. Duke	"Directional Antenna Media Access Protocols in a Multipath Environment," (UW, Dec. 2003)
D. Daoura	"Traffic Modelling and Prediction for Spatial Time Division Multiple Access Bandwidth-on-Demand Protocol," (UW, Dec. 2003)
R. Iyappan	"Acquisition of DS Ultrawideband Signals,"(UW, Dec. 2003)
A. Margolis	"Modelling Throughput and Starvation in 802.11 Wireless Networks with Multiple Flows," (UW, Aug. 2006)
T. Shing	"CCA and Time Fair Algorithms for Joint Adaptation in HD WLANs," (UW, Aug. 2007)
I. Purushothaman	"Fast Hand-off in 802.11 Networks for Voice Over WLAN" (UW, Aug. 2008)
T. Bosaw	"An Improved 802.11b Interference Model for Network Simulation" (UW, June 2010)
B. Cizdziel	"Coexistence of Radar Systems & WiFi Networks" (UW, May 2015)
Jarrett Gaddy	"Layer 2.5 Wireless Network Coding to Improve .11 Network Efficiency" (UW, May 2016)
A. Ashok	"Contributions to Radar-WiFi Spectrum Sharing" (UW, May 2017)
E. Ding	"Optimized Beam Training for mmWave Communications" (UW, June 2018)
A. Jadon	"UAV Networking: Design Considerations" (UW, July 2018).

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OTHER RESEARCH PERSONNEL

D.-S. Chen	Visiting Research Scholar (U. Pennsylvania, 1993-94)
Dr. Y. Song	Post-doctoral Fellow (U. Texas, 1997-98)
Dr. S. Zhang	Visiting Scholar (UW, 2001-02)
Dr. C.H. Cho	Visiting Scholar (UW, 2001-02)
Dr. S.S. Lee	Visiting Scholar (UW, 2002-03)
Dr. R. Vijaykumar	Post-doctoral Fellow (UW, 2004-06)
H. Eui-Seok	Visiting Scientist (UW 2004-05)
J. Choi	Visiting Scientist (UW 2004-05)
Dr. Y-C Ko	Visiting Scholar (UW 2006-08)
Dr. S-Y. Shin	Visiting Scholar (UW 2006-07)
Dr. C. Ghosh	Post-doctoral Fellow (2009-11)
Dr. S. Kim	Visiting Scholar (2011-12)
J. Feng	Visiting Ph.D student (2014-2015)
Y. Yin	Visiting Ph.D student (2014 - 2015)
A. Tang	Visiting Ph.D Student (2015-16)
Dr. Morteza Mehrnoush	Post-Doctoral Scholar (2016-2018)
F. Hao	Visiting Ph.D. student (2016-17)
Dr. Y. Gao	Visiting Asst. Prof. (2017-18)
Dr. L. Lanante	Visiting Asst. Prof. (2018-19)
W. Jiang	Visiting Ph.D. Student (2018-20)
Y. Sun	Visiting Ph.D. Student (2018-19)
P. Jimenez-Mateo	Visiting Ph.D. Student (2019)
S. Gopal	Visiting Ph.D. Student (2019-20)
D. Magrin	Visiting Ph.D. Student (2020)
H. Yin	Post-Doc. Research Scholar (2023-24)

PRESENT RESEARCH SUPERVISION

L. Cao " Resource Allocation for 5G Vehicular Networking" (Ph.D. 2024, anticipated)

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FUNDED RESEARCH

ARO DAAL03-87-K-10119 Dates: 12/88-12/90	"Applications of Subsurface Radar for Mine Detection" Amount: $251,000 [Co-P.I.]
AT&T Dates: 9/1/90-8/30/91	"Signal Processing Approaches for High-speed Communication over Digital Subscriber Lines" Amount: $50,000 [Co-P.I.]
NSF NCR 89-14431 Dates: 9/15/90-2/28/94	"Blind Algorithms and Other Advanced Techniques For Channel Equalization" Amount: $211,000 [P.I.]
SAMSUNG ELEC., PRINCETON, N. J. Dates: 9/1/91- 12/31/92	"Advanced TV: Analysis, Simulation & Design" Amount: $ 87,800 [P.I.]
NSF CDA 90-22530 Dates: 1/1/91-12/31/94	"CISE Research Instrumentation" Amount: $118,000 [Co-P.I.]
NSF REU Dates: 7/1/91-6/30/92	"Simulation of Advanced Equalization Techniques for High-speed Data Transmission" Amount: $5,000 [P.I.]
NSF REU Dates: 7/1/92-6/30/93	"Simulation of Trellis Coded Modulation Systems for Advanced TV Transmission" Amount: $5,000 [P.I.]
NSF REU Dates: 7/1/93-6/30/94	"Simulation of Multi-user Receivers for Mobile Radio" Amount: $5,000 [P.I.]
ESEERCO, New York Dates: 5/1/93-3/1/94	"Improved Dielectric Fluid Leak Detection" Amount: $68,000 [co-P.I.]
SHARP ELECT., MAHWAH, N. J. Dates: 01/01/94 - 12/01/94	"Advanced TV Channel Codec System Design" Amount: $ 63,000 [P.I.]
ARO DAAH04-96-1-0088 Dates: 06/01/96 - 05/30/99	"Design Issues for Advanced Digital Wireless Networks" Amount: $ 170,667 [P.I.]
NSF CDA 9613727 Dates: 09/01/97 - 12/31/99	"Broadband Wireless Networks: Joint U.S.-Mexico Research" Amount: $ 15,000 [P.I.]

FUNDED RESEARCH (contd.)

ARO AASERT DAAG 55-97-1-0339 Dates: 07/01/97 - 06/30/99	"Simulation, Computation & Software for Advanced Digital Wireless Networks" Amount: $38,100 [P.I.]
TEXAS HIGHER EDN. BOARD Dates: 01/01/98 - 12/30/99	"Design and Evaluation of Wireless Networking Protocols" Amount: $160,677 [co-P.I.]
DoD URISP/AFOSR F49620-96-1-0472 Dates: 09/15/96 - 09/14/2001	"Telecommunication Networks for Mobile & Distributed Communications and Computing" Amount: $ 2,000,000 [P.I.] (awarded at UTexas, UW subcontract approx. $237, 673)
NSF/ITR CCR 00-86032 Dates: 9/01/00 -8/31/05	"Heterogeneous System Integration in System-on-Chip Designs" Amount: $4,000,000 [co-P.I, share $283,440]
NSF SERG CCR 00-90012 Dates: 09/15/00-09/15/02	"Application of Communication-Theoretic Principles to Nano Interconnect Research" Amount: $100,00 [co-P.I.]
ARMY/CECOM Dates: 06/01/01-06/31/04	"Wideband On-the-Move Satellite Communications" Amount: $312,273 [P.I.]
Boeing Co. Dates: 03/30/03 - 12/31/03	"Directional Antenna Multiple Access Protocols" Amount: $50,000 [P.I.]
NSF ITR ANI 0325014 Dates: 09/15/03-08/31/07	"RESCUENET: Embedded In-Building Sensor Network to Assist Disaster Rescue" Amount: $ 404,687 [co-P.I., U.W. subcontract]
INTEL Corpn. Dates: 01/15/04-12/31/07	"Next Generation Wireless MESH Networks: PHY/MAC Based Optimization" Amount: $ 303,000 [P.I.]
BOEING Co. Dates: 05/15/2004-09/30/2004	"PHY/MAC Optimization for Connectionless Networking," Amount: $ 20,000 [P.I.]
FORD Co. Dates: 1/1/2005 - 12/31/2005	"New Wireless Interface Standards for Vehicle Infotronics," Amount: $34,000 [P.I.]
LOCKHEED MARTIN Corpn. Dates: 5/1/05-5/30/2007	"Network Centric Automatic Target Recognition," Amount: $80,000
T-MOBILE Co. Dates: 1/1/06- 7/30/07	"Mesh-Sim: Developing a Simulation Tool for Multi-radio Broadband MESH Networks,"[P.I.] Amount: $ 79,547
NSF CCLI Dates: 9/1/05-8/31/07	"A Computing Lab for Integrated Teaching Systems Education," Amount $10K [Co-P.I. portion; total= $160K]
NSF CRI Dates: 6/15/06-6/13/10	"Developing Next-Generation Open Source Network Simulator," Amount $97, 431 [Co-P.I. portion; total UW=$503 K]

FUNDED RESEARCH (contd.)

Boeing Phantom Works Dates: 1/1/07-12/31/07	"Adaptive MIMO Transceivers: PHY/MAC Design Considerationsr for Cognitive, Tactical Radio Networks" Amount $110,000 [P.I.]
NASA Dates: 9/1/06-8/31/09	"A Smart Sensor Web for Ocean Observation: System Design, Modeling and Optimization," Amount $329,640 [Co-P.I. portion; total = $1,481,200]
Ford Corpn. Dates: 3/1/07-2/28/10	"Broadband Wireless Network Assisted Collaborative Vehicle Infotainment" Amount $120,000 [P.I.]
OASD-NI Dates: 01/01/08-12/31/08	"Hybrid C2 Structures: Between Hierarchies and Edge Organizations Amount $114,800 [co-P.I.]
NSF ECS 0801997 Dates: 6/15/08-6/15/11	"Design and Prototyping for Network Convergence" Amount $150,200 [co-P.I, total=$395K]
MIT Lincoln Labs Dates: 04/01/08 - 06/01/10	"Wireless Networking Research" Amount $81, 980 [P.I.]
NSF ECS 0824265 Dates: 9/15/08-9/15/12	"Realizing the Internet of Things via RFID Sensor Nets" Amount $ 500,000 [P.I.]
DHS Center of Excellence Dates: 10/1/08- 07/30/12	"Collaborative E-M Imaging and Network Integration for Detection in Complex Environments " Amount $ 238,046 [P.I.]
AFOSR Dates: 04/15/2009 - 03/31/2012	"Cross Layer Networking for Airborne Platforms:Integrating Sensing Communications and Access Protocols " Amount $ 290,532 [P.I.]
DoE ISD 3481P1034 Dates: 9/15/2011 - 03/15/2013	"Distributed Energy Resource Management System" Amount $ 240,000 [P.I.]
NSF CRI CNS 1205725 Dates: 05/01/2012- 04/30/2015	"Ocean-TUNE: A Community Ocean Testbed for Underwater Wireless Networks," Amount $690,000 [P.I.]
UW Commercialization Gap Fund Dates: 9/30/2012-9/30-2013	"Broadband Access in TV White Space: System Prototyping for Proof-of-Concept $ 22,000
Nokia Research Center Dates: Multiple Gifts (2012 -18)	"Research in Wireless Networking" Amount $ 180,000 [P.I.]
DARPA DSO Dates: 04/1/2012 - 04/30/2014	"Knowledge Enhanced Compressive Measurement" Amount $ 150,000 [P.I.]
NSF EAGER CNS 1244643 Dates: 08/15/2012-08/14/2015	"Achieving Realism in ns-3 Wireless Network Simulation" Amount $ 200,000 [P.I.]

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FUNDED RESEARCH (contd.)

NSF AST (EARS) 1443923 Dates: 09/01/2014- 08/31/2018	"Measurement-augmented Spectrum Databases for White Spaces" Amount $ 345,000 [P.I.]
AFRL CERFER FA8650-14-D-1722 Dates:10/15/2014-05/14/2019	"Networked Cognitive Radar: Architectures & Optimizn." Amount $ 282,000 [P.I.]
NSF SAVI 1546950 Dates:09/01/2015-08/31/2018	"iCON: Institute for Cognitive Networking" Amount $ 133,480 [P.I.]
NSF EAGR 1634194 Dates: 05/01/2016-04/30/2018	"A Wide Area, Persistent Spectrum Monitoring System" Amount $ 149,495 [P.I.]
Microsoft Azure for Research Awards Dates: 05/23/2017- 05/23/2018	"CityScape: State-of-Art Metro Area Radio Spectrum Observato Amount $20,000
WA JCATI Dates: 07/01/2016-07/31/2017	"Advancing State-of-the-Art UAS Networking and Communicatic Amount $ 97, 324 [P.I.]
NSF CNS NeTS 1617153 Dates: 10/1/2016-09/30/2021	"Can LTE & WiFi Live HappilyEver After?" Amount $147,000 [co-P.I. portion]
NSF EARS 1643011 Dates: 09/15/2016-09/14/2021	"Mitigating Ultra Faint RFI to Enable Radio Cosmology" Amount $ 376,534 [co-P.I. portion]
Nat. Spectrum Consort. Dates: 09/01/2016-08/31/2018	"Development & Validation of Accurate Clutter Models for AWS- Amount $ 589,309 [co-P.I.]
Nat. Inst. Standards Tech. PSIAP Dates:06/01/2017-09/15/2020	"Modeling, Simulation and Performance Evaluation for Future Pu Amount $ 1,000,000 [P. I.]
MIT Lincoln Labs Dates: 04/01/2018 - 09/30/2021	"Wireless Networking Research" Amount $110,694 [P.I.]
NSF ICE-T 1836725 Dates: 09/16/2018 - 09/15/2021	"Performance Evaluation of Advanced Wireless Networks Edge In Amount $346,364 [P.I.]
Cisco Gift Dates: 03/01/2018 - 2020	" Performance Evaluation of 802.11ax" Amount $50,000 [P.I.]
Airbus Dates 02/01/2019-09/15/2019	"Comm Link Availability Modeling for UAS Risk Assessment" Amount $ 64,770 [P.I.]
Intel Univ. Research Gift Dates: 04/15/2019 - 04/15/2022	"mmWave Networking: Design Considerations for 5G " Amount $90,000 [P.I.]
NSF CCRI ENS Dates 10/01/2020-09/30/2023	"ns-3 Network Simulation for Next-G Wireless" Amount $ 962,657 [P.I.]
Mathworks Gift Dates: 09/01/2020 -	"WLAN System Simulation" Amount $35,000 [P.I.]

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FUNDED RESEARCH (contd.)

Facebook Conn. Gift Dates: 09/01/2020 -	"LTE modeling in ns-3 " Amount $55,000 [P.I.]
Nat. Inst. Standards Tech. Dates: 10/01/2020 -09/31/2022	"Cross-Layer Modeling & Performance Evaluation of 5G Public Safety based on NR C-V2X Sidelink" Amount $500,000 [P.I.]

ARCHIVAL JOURNAL PUBLICATIONS

1. H. R. Hashemipour, S. Roy and A. J. Laub, "Decentralized Structures for Parallel Kalman Filtering," *IEEE Trans. Aut. Contr.*, vol. AC-32, Jan. 1988, pp. 88-94.

2. J. J. Shynk and S. Roy, "Convergence Properties and Stationary Points of a Perceptron Learning Algorithm," *Proc. IEEE* (Spl. Issue on Neural Networks II), Oct. 1990, pp. 1599-1604. [reprinted in *Neural Networks: Theoretical Foundations and Analysis*, IEEE Press, ed. C. L. Lau, 1991].

3. S. Roy and J. J. Shynk, "Analysis of the Momentum LMS Algorithm," *IEEE Trans. Acoust. Speech Sig. Proc.*, vol. ASSP-32, Dec. 1990, pp. 2088-2098.

4. S. Roy, R. H. Hashemi and A. J. Laub, "Square-root Parallel Kalman Filtering using Reduced Order Local Filters," *IEEE Trans. Aerosp. Elect. Syst.*, vol. 27, Mar. 1991, pp. 276-290.

5. S. Roy and R. A. Iltis, "Decentralized Linear Estimation in Correlated Measurement Noise," *IEEE Trans. Aerosp. Elect. Syst.*, vol. 27, Nov. 1991, pp. 939-941.

6. T. Ozdemir, S. Roy and R. S. Berkowitz, "Imaging of Shallow Subsurface Objects: An Experimental Investigation," *IEEE Trans. Geosci. Rem. Sen.*, May 1992, pp. 472-481.

7. S. A. Raghavan and S. Roy,"Simple Sequence Detector for Coded (1-D) Partial Response Channel," Elect. Lett., vol. 28, no. 10, May 1992, pp. 962-963.

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