

Aveek Dutta

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RESEARCH INTERESTS	Physical Layer Analytics, Heterogeneous Networks, Blockchain for Network Security, Software Defined Radio, Autonomous Enforcement of Spectrum Policies, Internet of Things.
FACULTY APPOINTMENTS	University at Albany, State University of New York, Albany, New York, USA <ul style="list-style-type: none">▪ Assistant Professor, Department of Electrical and Computer Engineering Sep 2016 – Present▪ Co-Director: Mobile Emerging Systems and Applications (MESA) Lab University of Kansas, Lawrence, Kansas, USA <ul style="list-style-type: none">▪ Assistant Professor, Department of Electrical Engineering and Computer Science Sep 2015 – Jun 2016
POSTDOCTORAL EXPERIENCE	Princeton University, Princeton, New Jersey, USA <ul style="list-style-type: none">▪ Supervisor: Prof. Mung Chiang May 2013 – Jun 2015<ul style="list-style-type: none">• Focus: Crowdsourced Enforcement of spectrum policies, Coexistence in mmWave HetNets, Adaptive video streaming in Whitespaces.
EDUCATION	University of Colorado, Boulder, Colorado, USA <ul style="list-style-type: none">▪ Ph.D. in Electrical Engineering (Advisor: Prof. Dirk Grunwald) May 2008 – May 2013<ul style="list-style-type: none">• Thesis: CODIPHY: Composing On-Demand Intelligent Physical Layers▪ M.S. in Electrical Engineering Jan 2007 – May 2008<ul style="list-style-type: none">• Thesis: An Intelligent Physical Layer for Cognitive Radio Networks Institute of Engineering and Management, Kolkata, India <ul style="list-style-type: none">▪ B.S. in Electrical and Telecommunications Engineering May 1998 – May 2002<ul style="list-style-type: none">• Graduated with College Honors
FUNDING	NSF CISE Research Infrastructure Award (#1823225) - \$749,999 Oct 2018 – Oct 2021 Title – CHRONOS: A Cloud based Hybrid RF-Optical Network Over Synchronous Links PI: Dr. Dola Saha (University at Albany) Co-PI: <u>Dr. Aveek Dutta</u> and Dr. Hany Elgala (University at Albany) Overview: The primary goal of this project is to design, build and maintain a multi-node, heterogeneous, wideband, scalable, hybrid and synchronous Cloud Radio Access Network (Cloud RAN), specifically to support high throughput wireless access for emerging applications like Virtual Reality (VR), Industrial Internet of Things (IoT), 3D broadcast video, tele-surgery, etc. The combination of tight synchrony and heterogeneity among the network constituents make CHRONOS radically different and foundational to investigate previously unexplored research problems in wireless networking and communication. More Details can be found in the CHRONOS Website . Under Review NSF CNS CORE: Deep Reinforcement Learning for Non-stationary Channels - \$495,989 for 3 years NSF FMitF: Autonomous Synthesis of Radio Kernels using Formal Ontology - \$748,250 for 4 years NSF MRI: ARTEMIS - Accelerated Ray-Traced Channel Emulation In-Situ - \$1,499,999 for 4 years DoD SBIR: Deep RF Signal Analysis and Identification (DeepRFAI) System - \$37,000 for 1 year.
TEACHING	Fall 2016: Introduction to Communication Networks (at University of Kansas) Spring 2017: Internet of Things (First offering at University at Kansas) Fall 2017: Internet of Things (First offering at University at Albany) Spring 2018: Advanced Digital Communication (First offering at University at Albany) Fall 2018: Computer Communication Networks Spring 2019: Advanced Digital Communication

**PROFESSIONAL
AFFILIATIONS &
ACTIVITIES**

Member: Institute of Electrical and Electronics Engineers, IEEE Communication Society, Association of Computing Machinery.

Publicity Co-chair: COMSNETS 2016.

Journal Reviewer: IEEE Transaction of Wireless Communication, IEEE Transaction of Information Forensics, IEEE Transaction of Networking, IEEE Transaction of Cognitive Communications and Networks, ACM Transaction of Mobile Computing

**CAMPUS
ACTIVITIES**

Chair, Undergraduate Curriculum Committee

ABET Accreditation Committee

IEEE Student Advisor, University at Albany Chapter

PUBLICATIONS

JOURNALS

- [4] M. A. Abdul Careem, A. Dutta, "Spatio-Temporal Prediction of non-stationary wireless channels", in *IEEE Transactions on Wireless Communications (Under Review)*.
- [3] M. A. Abdul Careem, A. Dutta, "Spectrum Enforcement and Localization using Autonomous Agents with Cardinality", in *IEEE Transactions on Cognitive Communications and Networking (Under Review)*.
- [2] A. Dutta and M. Chiang, "See Something, Say Something Crowdsourced Enforcement of Spectrum Policies", in *IEEE Transactions on Wireless Communications*, vol. 15, no. 1, pp. 67-80, Jan 2016.
- [1] D. Saha, A. Dutta, D. Grunwald and D. Sicker, "GRaTIS: Free Bits in the Network", in *IEEE Transactions on Mobile Computing*, vol. 14, no. 1, pp. 72-85, Jan 2015.

CONFERENCES

- [17] M. A. Abdul Careem, A. Dutta and W. Wang, "Multi-Agent Planning with Cardinality: Towards Autonomous Enforcement of Spectrum Policies", in *2018 IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN)*, Seoul, 2018.
- [16] M. A. Abdul Careem, A. Dutta, "Spatio-Temporal Recommender for V2X Channels", in *2018 IEEE 88th Vehicular Technology Conference (VTC-Fall)*, Chicago, 2018.
- [15] M. A. Abdul Careem, M. Khadr, A. F. Hussien, D. Saha, H. Elgala and A. Dutta, "CHRONOS: A Cloud based Hybrid RF-Optical Network Over Synchronous Links," in *2018 IEEE 5G World Forum (5GWF)*, Silicon Valley, CA, 2018.
- [14] M. Al-Ibadi and A. Dutta, "Predictive analytics for non-stationary V2I channel", in *2017 9th International Conference on Communication Systems and Networks (COMSNETS)*, Bangalore, 2017.
- [13] M. Wang, A. Dutta, S. Buccapatnam and M. Chiang, "Regret-Minimizing Exploration in HetNets with mmWave", in *2016 13th Annual IEEE International Conference on Sensing, Communication, and Networking (SECON)*, London, 2016.
- [12] X. Wang, J. Chen, A. Dutta and M. Chiang, "Adaptive video streaming over whitespace: SVC for 3-Tiered spectrum sharing", in *2015 IEEE Conference on Computer Communications (INFOCOM)*, Kowloon, 2015.
- [11] A. Dutta, D. Saha, D. Grunwald, and D. Sicker, "CODIPHY – Composing On-Demand Intelligent Physical Layers", in *2013 IEEE Proceedings of the second workshop on Software Radio Implementation Forum (SRIF)*, Hong Kong, 2013.
- [10] A. Dutta, D. Saha, D. Grunwald and D. Sicker, "Secret Agent Radio: Covert Communication through Dirty Constellations", in *2013 Information Hiding (IH 2012), Lecture Notes in Computer Science*, vol 7692, 2013.
- [9] D. Saha, A. Dutta, D. Grunwald and D. Sicker, "GRaTIS: Sensing and intelligence for performance in the presence of legacy networks", in *2012 7th International ICST Conference on Cognitive Radio Oriented Wireless Networks and Communications (CROWNCOM)*, Stockholm, 2012.
- [8] D. Saha, A. Dutta, D. Grunwald and D. Sicker, "Blind synchronization for NC-OFDM — When "channels" are conventions, not mandates", in *2011 IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN)*, Aachen, 2011.

- [7] A. Dutta, D. Saha, D. Grunwald and D. Sicker, "An architecture for software defined cognitive radio", in *Proceedings of the 6th ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS '10)*, La Jolla, 2010.
- [6] D. Saha, A. Dutta, D. Grunwald and D. Sicker, "Active radar — A cooperative approach using multicarrier communication", in *IEEE Local Computer Network Conference*, Denver, 2010.
- [5] A. Dutta, D. Saha, D. Grunwald and D. Sicker, "Practical implementation of blind synchronization in NC-OFDM based cognitive radio networks", in *Proceedings of the 2010 ACM workshop on Cognitive Radio Networks (CoRoNet)*, Chicago, 2010.
- [4] D. Saha, A. Dutta, D. Grunwald and D. Sicker, "Channel Assignment in Virtual Cut-through Switching Based Wireless Mesh Networks", in *Distributed Computing and Networking (ICDCN), Lecture Notes in Computer Science, vol 5935*, 2010.
- [3] A. Dutta, D. Saha, D. Grunwald and D. Sicker, "SMACK: a SMart ACKnowledgment scheme for broadcast messages in wireless networks", in *Proceedings of the ACM SIGCOMM 2009 conference on Data communication (SIGCOMM)*, Barcelona, 2009.
- [2] D. Saha, A. Dutta, D. Grunwald and D. Sicker, "'PHY Aided MAC - A New Paradigm", in *IEEE INFOCOM 2009*, Rio de Janeiro, 2009.
- [1] A. Dutta, J. Fifield, G. Schelle, D. Grunwald and D. Sicker, "An intelligent physical layer for cognitive radio networks", in *Proceedings of the 4th Annual International Conference on Wireless Internet (WICON)*, Hawaii, 2008.

CURRENT STUDENTS

Doctoral Candidates

- Maqsood Ahmed Abdul Careem (Electrical and Computer Engineering) Expected May 2021
 - Thesis Focus: Predictive Analytics for V2X Networks.
- Shuvam Chakraborty (Electrical and Computer Engineering) Expected May 2023
 - Thesis Focus: Signal Processing for Cloud Radio Access Networks

Masters Candidate

- Keith Zeto (Computer Science) Expected Dec 2019
 - Thesis Focus: Blockchain for Wireless Network Protocols.

OTHER WORK EXPERIENCE

- Research Assistant** Jan 2007 – May 2013
Systems Lab, University of Colorado Boulder, CO
- Visiting Scholar** May 2009 – Aug 2009
Wireless Information Network Laboratory (WINLAB), Rutgers University, NJ
- Research Intern** Sep 2008 – Dec 2008
Mitsubishi Electric Research Laboratory, Boston, MA
- Assistant Manager - Projects** May 2002 – May 2006
Tractors India Limited (Caterpillar India), Kolkata, India

LIVE DEMONSTRATION

- NSF GENI-COGRadio:** GENI Engineering Conference, Kansas City Nov 2011
Live video streaming application using the SDR developed at CU under the NSF GENI-COGRadio Project. Full implementation was done using two OFDM transceivers operating in 2.4GHz band at 36 Mbps using 16QAM-1/2 rate modulation. Live video feed was captured using a webcam and translated to UDP packets to be modulated by the custom radio hardware. The opposite was done at the receiver.
- NC-OFDM Transceiver:** GENI Engineering Conference, Puerto Rico Mar 2011
Demonstrated an example of non-contiguous OFDM using the SDR developed at University at Colorado Boulder. This shows the frequency agility of the platform that is useful in the TV Whitespaces for cognitive radio applications.

[CV last updated on 2019-03-04]