

## Eyuphan Bulut

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### CONTACT INFORMATION

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Virginia Commonwealth University  
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### RESEARCH INTERESTS

**Mobile and wireless networks:** Cyber-physical systems, Internet-of-Things (IoT), UAV networks, crowd-sensing, wireless sensing, mobile social networks, wireless charging;  
**Security:** Network security, privacy and trust, cybersecurity;  
**Mobile cellular (4G/5G) systems:** NextG networks, mobile core network, data offloading;

### EDUCATION

**Rensselaer Polytechnic Institute**, Troy, NY USA

Ph.D., Computer Science, May, 2011

- Dissertation Title: “Opportunistic Routing Algorithms in Delay Tolerant Networks”
- Advisor: Prof. Boleslaw K. Szymanski

**Bilkent University**, Ankara, Turkey

M.S., Computer Engineering, May, 2007

- Thesis Title: “Connectivity and Coverage Preserving Sleep Scheduling Mechanism with Predictive Coverage and Multiple Mode Selections in Wireless Sensor Networks”
- Advisor: Assoc. Prof. Ibrahim Korpeoglu

### ACADEMIC AND INDUSTRIAL EXPERIENCE

**Virginia Commonwealth University**, Richmond, VA  
*Associate Professor of Computer Science*

**July 2020 - present**

**Virginia Commonwealth University**, Richmond, VA  
*Assistant Professor of Computer Science*

**Sept 2015 - June 2020**

**Air Force Research Lab (AFRL)**, Rome NY  
*Summer Visiting Faculty*

**June 2019 - Aug 2019**

**Cisco Systems**, Richardson, TX  
*Senior Engineer* (in Mobile Internet Technology Group (MITG))

**June 2011 - Sept 2015**

**IBM T.J. Watson Research Center**, Hawthorne, NY  
*Research Intern* (worked at Army Research Lab, Adelphi, MD for collaboration)

**Aug 2010 - Nov 2010**

**Rensselaer Polytechnic Institute**, Troy, NY USA  
*Research and Teaching Assistant*

**Aug 2007 - May 2011**

**Bilkent University**, Ankara, Turkey  
*Research and Teaching Assistant*

**Sept 2005 - May 2007**

### FUNDED RESEARCH PROJECTS

**NSF US Ignite program:** \$396,000 (2017-2021)  
“*Rapid and Resilient Critical Data Sourcing for Public Safety and Emergency Response*”  
Lead PI: Eyuphan Bulut, coPI: Milos Manic (Total \$616,000 including UCF share)

**NSF CNS (NeTS) program:** \$228,500 (2018-2023)  
“*Collaborative Research: Improving Spectrum Efficiency for Hyper-Dense IoT Networks*”  
PI: Eyuphan Bulut (Total \$566,000 including GATech and NCSU shares)

**Air Force Research Lab (Extension grant):** \$10,000 (09/2019-11/2019)  
“*Reinforcement Learning based Autonomous UAV Swarm Path Planning in Dynamic and Uncertain*”

*Environments”*  
Sole PI: Eyuphan Bulut

**Idaho National Laboratory - Wireless Security Institute:** \$20,000 (05/2020-08/2020)  
*“Vehicle-to-Vehicle Security in 5G Systems”*  
Sole PI: Eyuphan Bulut

**VCU Presidential Research Quest Fund (PERQ):** \$50,000 (07/2020-12/2021)  
*“Device-Free WiFi Sensing based Occupancy Detection in Buildings”*  
Sole PI: Eyuphan Bulut

**Commonwealth Cyber Initiative (CCI) - Central VA Node:** \$70,000 (08/2020-07/2021)  
*“Cyber and Physically Secure Communities: Resilient, Sustainable, Energy Efficient Smart Cities”*  
PI: Milos Manic, coPI: Eyuphan Bulut, Irfan Ahmed, Changqing Luo

**Commonwealth Cyber Initiative (CCI) - Central VA Node:** \$50,000 (06/2021-05/2022)  
*“Experimenting Aggregated IoT 5G Communication through IMSI Sharing”*  
Sole PI: Eyuphan Bulut

**Commonwealth Cyber Initiative (CCI) - Central VA Node:** \$100,000 (09/2021-05/2023)  
(my share - \$30k)  
*“Smart Wireless Attack and WiFi Sensing via Intelligent Reflecting Surface”*  
PI: Yanxiao Zhao, coPI: Eyuphan Bulut, Changqing Luo

**VCU School of Nursing** \$19,350 (02/2022-02/2023) (my share - \$13k)  
*“WiFi Sensing-Based Device-Free Daily Activity and Mobility Recognition for Older Adults”*  
PI: Jane Chung, coPI: Eyuphan Bulut, Ingrid Pretzer-Aboff

**NSF REU program** \$396,942 (03/2021-02/2024)  
*“REU Site: End-User Programming of Cyber-Physical Systems”*  
PI: David Shepherd, coPI: Kostadin Damevski, Senior Personnel: Eyuphan Bulut, Bridget McInnes

**Idaho National Laboratory - Wireless Security Institute:** \$30,000 (05/2022-08/2022)  
*“Identifying V2X Security Vulnerabilities in Untrusted 5G Networks”*  
Sole PI: Eyuphan Bulut

**Commonwealth Cyber Initiative (CCI) - Central VA Node:** \$50,000 (08/2022-07/2023)  
(my share - \$40k)  
*“Secure Mobile (iOS) Programming through Experiential Learning”*  
PI: Eyuphan Bulut, coPI: Tunesha Witcher (VUU)

**Commonwealth Cyber Initiative (CCI) - Central VA Node:** \$30,000 (09/2022-08/2023)  
*“Wireless Smart Home Intrusion Detector”*  
Sole PI: Eyuphan Bulut

**NSF IUCRC program** \$19,999 (04/2023-03/2023)  
*“IUCRC Planning Grant VCU: Center for Wireless Innovation towards Secure, Pervasive, Efficient and Resilient Next G Networks (WISPER)”*  
PI: Erdem Topsakal, coPI: Eyuphan Bulut, Tamer Nadeem, Irfan Ahmed

IMPACT OF  
PUBLICATIONS

Total citations: 2534 (from Google Scholar - as of 8/22)  
h-index: 27  
i-index: 56

COURSES TAUGHT

**CMSC 401:** Algorithm Analysis with Advanced Data Structures (*Fall 2016, Fall 2017, Fall 2018, Fall 2019, Fall 2020, Fall 2021, Fall 2022*) with classes of 80-90 students  
**CMSC 428:** Mobile (iOS) Programming (*Spring 2016, Spring 2017, Spring 2018, Spring 2020,*

*Spring 2022*) with classes of 30-40 students

**CMSC 628:** Mobile Networks (*Spring 2019, Spring 2021*) with classes of 15 students

JOURNAL  
PUBLICATIONS

Graduate student (g) and undergraduate student (u) authors mentored by Dr. Bulut.

(\*) denotes corresponding author if not last author.

[J28] A. Chapnevis(g), I. Guvenc, and **E.Bulut**, "IMSI Sharing based Dynamic and Flexible Traffic Aggregation for Massive IoT Networks", IEEE Internet of Things Journal, 2022, doi: 10.1109/JIOT.2022.3155923

[J27] S. M. Hernandez(g), and **E.Bulut**, "WiFederated: Scalable WiFi Sensing using Edge Based Federated Learning", IEEE Internet of Things Journal, 2021, doi: 10.1109/JIOT.2021.3137793

[J26] F. Yucel(g), and **E.Bulut**, "Online Stable Task Assignment in Opportunistic Mobile Crowdsensing with Uncertain Trajectories", IEEE Internet of Things Journal, 2021, doi: 10.1109/JIOT.2021.3118134

[J25] F. Yucel(g), M. Yuksel and **E.Bulut**, "Coverage-aware Stable Task Assignment in Opportunistic Mobile Crowdsensing", IEEE Transactions on Vehicular Technology (TVT) , 2021, doi: 10.1109/TVT.2021.3065688

[J24] E. Erdin, M. Cebe, K. Akkaya, **E.Bulut**, and S. Uluagac, "A scalable private Bitcoin payment channel network with privacy guarantees", Journal of Network and Computer Applications (JNCA), 2021, doi: 10.1016/j.jnca.2021.103021

[J23] F. Yucel(g), M. Yuksel and **E. Bulut**, "QoS-based Budget Constrained Stable Task Assignment in Mobile Crowdsensing", IEEE Transactions on Mobile Computing (TMC), 2020, doi: 10.1109/TMC.2020.2997280

[J22] A. Dhungana(g), and **E.Bulut**, "Energy balancing in mobile opportunistic networks with wireless charging: Single and multi-hop approaches", Elsevier Ad hoc Networks, 2020, doi: 10.1016/j.adhoc.2020.1023

[J21] S. Hernandez(g), and **E. Bulut**, "Using Perceived Direction Information for Anchorless Relative Indoor Localization", Journal of Network and Computer Applications (JNCA), 2020, doi: 10.1016/j.jnca.2020.102714

[J20] F. Yucel(g), and **E. Bulut**, *User Satisfaction Aware Maximum Utility Task Assignment in Mobile Crowdsensing*, Computer Networks, 2020, doi: 10.1016/j.comnet.2020.107156

[J19] M. Moin Uddin Chowdhury, S.J. Maeng, **E. Bulut**, and I. Guvenc, *3D Trajectory Optimization in UAV-Assisted Cellular Networks Considering Antenna Radiation Pattern and Backhaul Constraint*, IEEE Transactions on Aerospace and Electronic Systems (TAES), 2020.

[J18] E. Erdin, M. Cebe, K. Akkaya, S. Solak, **E. Bulut**, and S. Uluagac, *A Bitcoin Payment Network with Reduced Transaction Fees and Confirmation Times*, Computer Networks, 2020, doi: 10.1016/j.comnet.2020.107098

[J17] A. Dhungana(g), and **E. Bulut**, *Peer-to-peer energy sharing in mobile networks: Applications, challenges, and open problems*, Elsevier Ad hoc Networks, 2019, doi: 10.1016/j.adhoc.2019.102029

[J16] **E. Bulut**, M. Kisacikoglu and K. Akkaya, *Spatio-Temporal Non-intrusive Direct V2V Charge Sharing Coordination*, IEEE Transactions on Vehicular Technology (TVT), 2019, doi: 10.1109/TVT.2019.293195

[J15] A. Dhungana(g), T. Arodz, and **E. Bulut**, *Exploiting Peer-to-Peer Wireless Energy Sharing for Mobile Charging Relief*, Elsevier Adhoc Networks, 2019.

[J14] F. Yucel(g), K. Akkaya, and **E.Bulut**, *Efficient and Privacy Preserving Supplier Matching for Electric Vehicle Charging*, Elsevier Ad hoc Networks, pp. 1-10, 2018.

- [J13] H. Binol, I. Guvenc\*, **E.Bulut** and K. Akkaya, *A hybrid evolutionary search method for complex function optimization problems*, IET Electronics Letters, 2018.
- [J12] F. YucelⓂ, and **E.Bulut**, *Clustered Crowd GPS for Privacy Valuing Active Localization*, IEEE Access, 6(1), pp. 23213-23221, 2018.
- [J11] X. Lu, **E. Bulut\***, and B. Szymanski, *Towards Limited Scale-free Topology with Dynamic Peer Participation*, Computer Networks, vol. 106, pp. 109-121, 2016.
- [J10] **E. Bulut\***, S. Geyik, and B. Szymanski, *Efficient Routing in DTNs with Correlated Node Mobility*, in Elsevier Pervasive and Mobile Computing (PMC), pp 150-163, August, 2014.
- [J9] **E. Bulut\*** and B. Szymanski, *WiFi Access Point Deployment for Efficient Mobile Data Offloading*, in ACM Mobile Computing and Communications Review (MC2R) 17(1):71-78, January, (**invited paper**), 2013.
- [J8] **E. Bulut\***, B. Szymanski, *Constructing Limited Scale-Free Topologies Over Peer-to-Peer Networks*, IEEE Transactions on Parallel and Distributed Systems (TPDS), 25(4):919-928, 2014.
- [J7] S. Geyik, **E. Bulut**, and B. Szymanski, *Grammatical Inference for Modeling Mobility Patterns in Networks*, IEEE Transactions on Mobile Computing (TMC), 12(11), pp. 2119-2131, 2013.
- [J6] **E. Bulut\***, and B. Szymanski, *Exploiting Friendship Relations for Efficient Routing in Mobile Social Networks*, IEEE Transactions on Parallel and Distributed Systems (TPDS), 23(12), pp. 2254-2265, 2012 (**spotlight (best) Paper** of the issue and featured by IEEE Special Technical Community on Social Networks).
- [J5] **E. Bulut\***, and B. Szymanski, *Secure Multi-copy Routing in Compromised Delay Tolerant Networks*, in Springer Wireless Personal Communications, 73 (1), pp. 149-168, 2013 (**invited paper**).
- [J4] Z. Wang, **E. Bulut**, and B.Szymanski, *Energy Efficient Location Service for Mobile Ad Hoc Networks*, in Elsevier Ad hoc Networks, 11(1), pp. 273-28, January 2013.
- [J3] **E. Bulut\***, and I. Korpeoglu, *Sleep Scheduling with Expected Common Coverage in Wireless Sensor Networks*, ACM Wireless Networks, vol. 17, issue 1, pp. 19-40, 2011.
- [J2] Z.Wang, **E. Bulut**, and B. Szymanski, *Distributed Energy Efficient Target Tracking with Binary Sensor Networks*, ACM Transactions on Sensor Networks, vol. 6, 2010.
- [J1] **E. Bulut\***, Z. Wang, and B. Szymanski, *Cost Effective Multi-Period Spraying for Routing in Delay Tolerant Networks*, IEEE/ACM Transactions on Networking, vol. 18, 2010.

CONFERENCE/  
WORKSHOP  
PUBLICATIONS

- [C68] S. HernandezⓂ, M. TouhiduzzamanⓂ, P. Pidcoe, and **E. Bulut**, "Wi-PT: Wireless Sensing based Low-cost Physical Rehabilitation Tracking", in Proc. of IEEE International Conference on E-health Networking, Application & Services (HealthCom), 2022.
- [C67] S. M. HernandezⓂ and **E. Bulut**, "Online Stream Sampling for Low-Memory On-Device Edge Training for WiFi Sensing", in Proc. of 15th ACM Conference on Security and Privacy in Wireless and Mobile Networks - ACM Workshop on Wireless Security and Machine Learning (WiseML 2022), May 16-19, 2022.
- [C66] F. YucelⓂ and **E. Bulut**, "Three-dimensional Stable Task Assignment in Semi-opportunistic Mobile Crowdsensing", in Proc. of the 23rd IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM), June 14-17, 2022.
- [C65] S. M. HernandezⓂ, D. ErdagⓂ and **E. Bulut**, "Towards Dense and Scalable Soil Sensing Through Low-Cost WiFi Sensing Networks", in Proc. of the 46th IEEE Conference on Local

Computer Networks (LCN), October 4-7, 2021.

[C64] S. M. Hernandez<sup>Ⓔ</sup>, and **E. Bulut**, "Adversarial Occupancy Monitoring using One-Sided Through-Wall WiFi Sensing", in Proc. of IEEE International Conference on Communications (ICC) 2021, Virtual, Montreal.

[C63] A. Chapnevis<sup>Ⓔ</sup>, I. Guvenc, L. Njilla and **E. Bulut**, "Collaborative Trajectory Optimization for Outage-aware Cellular-Enabled UAVs", in Proc. of IEEE 93rd Vehicular Technology Conference: VTC2021-Spring, Virtual, 25 - 28 April 2021.

[C62] A. Chapnevis<sup>Ⓔ</sup>, I. Guvenc, and **E. Bulut**, "Traffic Shifting based Resource Optimization in Aggregated IoT Communication", accepted to appear in Proc. of IEEE Local Computer Networks (LCN), Nov 16-19, 2020.

[C61] F. Yucel<sup>Ⓔ</sup>, and **E. Bulut**, "Time-dependent Stable Task Assignment in Participatory Mobile Crowdsensing", accepted to appear in Proc. of IEEE Local Computer Networks (LCN), Nov 16-19, 2020.

[C60] F. Yucel<sup>Ⓔ</sup>, A. Bhuyan, and **E. Bulut**, "Secure, Resilient and Stable Resource Allocation for D2D-based V2X Communication", accepted to appear in Proc. of IEEE Resilience Week, Oct, 2020.

[C59] **E. Bulut** and A. Dhungana<sup>Ⓔ</sup>, "Social-Aware Energy Balancing in Mobile Opportunistic Networks", in Proceedings of IEEE 16th International Conference on Distributed Computing in Sensor Systems (DCOSS) - 2nd International Workshop on Wirelessly Powered Systems and Networks (WPSN), July 15-17, 2020.

[C58] A. Dhungana<sup>Ⓔ</sup>, and **E. Bulut**, "Opportunistic Wireless Crowd Charging of IoT Devices from Smartphones", in Proceedings of IEEE 16th International Conference on Distributed Computing in Sensor Systems (DCOSS) - 2nd International Workshop on Wirelessly Powered Systems and Networks (WPSN), July 15-17, 2020.

[C57] S. Hernandez<sup>Ⓔ</sup>, and **E. Bulut**, "Lightweight and Standalone IoT based WiFi Sensing for Active Repositioning and Mobility", in Proceedings of 21st IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM), August 31 - September 03, 2020, Cork, Ireland.

[C56] S. Hernandez<sup>Ⓔ</sup>, and **E. Bulut**, "Performing WiFi Sensing with Off-the-shelf Smartphones", in Proceedings of the IEEE International Conference on Pervasive Computing and Communications (Percom) as demo paper, 23-27 March 2020, Austin, TX, USA.

[C55] F. Yucel<sup>Ⓔ</sup>, and **E. Bulut**, "Location-dependent Task Assignment for Opportunistic Mobile Crowdsensing", in Proceedings of the IEEE Consumer Communications & Networking Conference (CCNC), 10-13 January 2020, Las Vegas, USA.

[C54] S. Hernandez<sup>Ⓔ</sup>, and **E. Bulut**, "TrinaryMC: Monte Carlo Based Anchorless Relative Positioning for Indoor Positioning", in Proceedings of the IEEE Consumer Communications & Networking Conference (CCNC), 10-13 January 2020, Las Vegas, USA.

[C53] A. Dhungana<sup>Ⓔ</sup>, and **E. Bulut**, "Mobile Energy Balancing in Heterogeneous Opportunistic Networks", in Proceedings of the 16th IEEE International Conference on Mobile Ad-Hoc and Smart Systems (MASS), Monterey, CA, USA, November 4 - 7, 2019.

[C52] A. Dhungana<sup>Ⓔ</sup>, and **E. Bulut**, "Loss-Aware Efficient Energy Balancing in Mobile Opportunistic Networks", in Proceedings of IEEE Global Telecommunications Conference (GLOBECOM), 9-13 December 2019, Waikoloa, HI, USA.

[C51] F. Yucel<sup>Ⓔ</sup>, and **E. Bulut**, "Joint Optimization of System and User oriented Task Assign-

ment in Mobile Crowdsensing”, in Proceedings of IEEE Global Telecommunications Conference (GLOBECOM), 9-13 December 2019, Waikoloa, HI, USA.

[C50] C. Wickramasinghe, D. Marino, F. Yucel<sup>g</sup>, **E. Bulut**, and M. Manic., ”Data Driven Hourly Taxi Drop-offs Prediction using TLC Trip Record Data”, in Proc. 12th International Conference on Human System Interaction (IEEE HSI) 2019, Richmond VA, USA, June, 25-27, 2019.

[C49] E. Erdin, M. Cebe, K. Akkaya, **E. Bulut**, and S. Uluagac, ”A Heuristic-based Private Bitcoin Payment Network Formation Using Off-Chain Links”, in Proc. of The International Conference on Blockchain (Blockchain-2019), Atlanta, July 14-17, 2019.

[C48] A. Dhungana<sup>g</sup>, and **E. Bulut**, *Energy sharing based Content Delivery in Mobile Social Networks*, in Proc. of 20th IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM), Washington D.C., June, 2019 (acceptance ratio 16%).

[C47] **E. Bulut\*** and M. Yuksel, *Integrating In-Network Computing for Secure and Efficient Cascaded Delivery in DTNs*, in Proc. of the 39th IEEE International Conference on Distributed Computing Systems (ICDCS 2019) Workshop on Network Meets Intelligent Computations (NMIC), July, 2019.

[C46] S. Chaudhry, **E. Bulut**, and M. Yuksel, *A Distributed SDN Application for Cross-Institution Data Access*, in Proc. of the 28th International Conference on Computer Communications and Networks (ICCCN 2019), July, 2019 (invited).

[C45] E. Ucer, R. Buckreus, M. C. Kisacikoglu\*, **E. Bulut**, M. Guven, Y. Sozer, and L. Giubbolini, *A Flexible V2V Charger as a New Layer of Vehicle-Grid Integration Framework*, in Proc. of IEEE Transportation Electrification Conference (ITEC), 2019.

[C44] **E. Bulut\***, I. Guvenc and K. Akkaya *Privacy Preserving Distributed Matching for Device-to-Device IoT Communications*, in Proc. of The 12th ACM Conference on Security and Privacy (ACM WiSec), Miami, May, 2019 (Poster).

[C43] M.U. Chowdhury, S. J. Maeng, I. Guvenc\* and **E. Bulut**, *Effects of 3D antenna radiation and two-hop relaying on optimal UAV trajectory in cellular networks*, in Proc. IEEE Aerospace Conference, Big Sky, March, 2019.

[C42] M.U. Chowdhury, **E. Bulut** and I. Guvenc, *Trajectory Optimization in UAV-Assisted Cellular Networks under Mission Duration Constraint*, to appear in Proc. IEEE Radio & Wireless Week (RWS), Orlando, Jan, 2019.

[C41] F. Yucel<sup>g</sup>, **E. Bulut\*** and K. Akkaya, *Privacy Preserving Distributed Stable Matching of Electric Vehicles and Charge Suppliers*, in Proc. IEEE Vehicular Technology Conference (VTC-Fall), Chicago, August, 2018.

[C40] **E. Bulut\***, and I. Guvenc, *Dynamically Shared Wide-Area Cellular Communication for Hyperdense IoT Devices*, in Proc. Local Computer Networks (LCN) Workshops, Chicago, October, 2018.

[C39] H. Binol, **E. Bulut**, K. Akkaya, and I. Guvenc, *Time Optimal Multi-UAV Path Planning for Gathering ITS Data from Roadside Units*, in Proc. IEEE Vehicular Technology Conference (VTC-Fall), Chicago, August, 2018.

[C38] E. Erdin, M. Cebe, K. Akkaya, S. Solak, **E. Bulut**, and S. Uluagac, *Building a Private Bitcoin-based Payment Network among Electric Vehicles and Charging Stations*, in Proc. of The International Conference on Blockchain (Blockchain-2018), Halifax, Canada, July 30-Aug 3, 2018.

[C37] **E. Bulut\***, S. Hernandez<sup>u</sup>, A. Dhungana<sup>g</sup> and B. Szymanski, *Is Crowdcharging Possible?*, in Proc. of The 27th International Conference on Computer Communications and Networks (ICCCN

2018), 2018.

[C36] **E.Bulut\***, and I. Guvenc, *Trajectory Optimization for Cellular-Connected UAVs with Disconnectivity Constraint*, in Proc. of IEEE International Conference on Communications (ICC) Workshops (Integrating 5G into UAVs), Kansas City, May, 2018.

[C35] A. Dhungana<sup>g</sup>, T. Arodz, and **E.Bulut\***, *Charging Skip Optimization with Peer-to-Peer Wireless Energy Sharing in Mobile Networks*, in Proc. of IEEE International Conference on Communications (ICC), Kansas City, May, 2018.

[C34] B. Roberts, K. Akkaya, **E.Bulut**, and M. Kisacikoglu, *An Authentication Framework for Electric Vehicle-to-Electric Vehicle Charging Applications*, in Proc. MASS REU Research in Networking and Systems Workshop 2017, Orlando, October, 2017.

[C33] **E. Bulut\***, and A. Gossain, *Mobile Core Network Redimensioning for Efficient Resource Utilization*, in Proc. Infocom Perfecto Workshop 2017, Atlanta, May, 2017.

[C32] A. Dhungana<sup>g</sup>, and **E. Bulut**, *Timely Information Dissemination with Distributed Storage in Delay Tolerant Mobile Sensor Networks*, in Proc. Infocom MiseNet Workshop 2017, Atlanta, May, 2017.

[C31] **E. Bulut\***, and B. K. Szymanski, *Identifying the Space Buddies to Track Lost Items*, in Proc. SocialSens 2017 (in conjunction with CPSWeek), Pittsburg, April, 2017.

[C30] **E. Bulut\***, and M. Kisacikoglu, *Mitigating Range Anxiety via Vehicle-to-Vehicle Social Charging System*, in Proc. IEEE Vehicular Technology Conference (VTC) 2017, Sydney, June, 2017.

[C29] **E. Bulut\***, and B. Szymanski, *Mobile Energy Sharing through Power Buddies*, in Proc. IEEE WCNC 2017, San Francisco, March, 2017.

[C28] **E. Bulut\***, and B. Szymanski, *Rethinking Offloading WiFi Access Point Deployment from User Perspective*, Workshop on Smart Environments & Urban Networking, (SEUNet) in Proc. IEEE WiMob 2016, New York, NY, October 17, 2016.

[C27] **E. Bulut\***, and B. Szymanski, *Understanding User Behavior via Mobile Data Analysis*, in Proceedings of Proc. IEEE ICC Workshops, pp. 1548-1553., June 8, London, UK, 2015

[C26] **E. Bulut\***, M. E. Ahsen, and B. Szymanski, *Opportunistic Wireless Charging for Mobile Social and Sensor Networks*, in Proceedings of the 6th IEEE International Workshop on Management of Emerging Networks and Services (IEEE MENS 2014) in conjunction with IEEE GLOBECOM 2014, 8-12 December, Austin, 2014.

[C25] B. O. Holzbauer, B. Szymanski\* and **E. Bulut**, *Impact of Socially Based Demand on the Efficiency of Caching Strategy*, in Proceedings of the Proc. 6th IEEE Int. Conf. Pervasive Computing and Communications Workshops (PERCOM Workshops), IEEE Press, pp. 401-406. , Budapest, Hungary, March 24-28, 2014.

[C24] **E. Bulut\***, and B. Szymanski, *WiFi Access Point Deployment for Efficient Mobile Data Offloading*, in Proceedings of ACM International Workshop on Practical Issues and Applications in Next Generation Wireless Networks (PINGEN 2012) at MOBICOM 2012, Istanbul, Turkey, August 26, 2012, pp. 45-50.

[C23] B. O. Holzbauer, B. Szymanski\* and **E. Bulut**, *Socially-Aware Market Mechanism for Participatory Sensing*, in Proceedings of ACM International Workshop on Mission-Oriented Wireless Sensor Networking (MiSeNet) at MOBICOM 2012, Istanbul, Turkey, August 26, 2012, pp. 9-14.

[C22] S. C. Geyik, **E. Bulut**, and B. Szymanski, *Utilizing PCFGs for Modeling and Learning Ser-*

*vice Compositions in Sensor Networks*, in Proceedings of IEEE International Conference on Service Computing, Hawaii, June, 2012.

[C21] **E. Bulut** and B. Szymanski, *On Growth of Limited Scale-Free Overlay Network Topologies*, in Proceedings of Fourth International Workshop on Network Science for Communication Networks (NetSciCom 2012), in conjunction with INFOCOM 2012, Orlando, March, 2012.

[C20] **E. Bulut** and B. Szymanski, *On Secure Multi-copy based Routing in Delay Tolerant Networks*, in Proceedings of the First International Workshop on Privacy, Security and Trust in Mobile and Wireless Systems (MobiPST 2011), in conjunction with ICCN, 2011.

[C19] **E. Bulut**, S. Geyik and B. Szymanski, *Efficient Routing in Delay Tolerant Networks with Correlated Node Mobility*, in Proceedings of 7th IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS), Nov, 2010.

[C18] **E. Bulut**, and B. Szymanski, *Friendship based Routing in Delay Tolerant Mobile Social Networks*, in Proceedings of GLOBECOM 2010.

[C17] S. C. Geyik, **E. Bulut**, and B. Szymanski, *PCFG based Synthetic Mobility Trace Generation*, in Proceedings of GLOBECOM 2010.

[C16] Z. Wang, **E. Bulut**, and B. Szymanski, *Service Discovery for Delay Tolerant Networks*, in Proceedings of workshop on Heterogeneous, Multi-Hop, Wireless and Mobile Networks (HeterWMN), in conjunction with GLOBECOM 2010.

[C15] **E. Bulut**, S. Geyik, and B. Szymanski, *Conditional Shortest Path Routing in Delay Tolerant Networks*, in n Proceedings of 11th IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM) , June, 2010.

[C14] Z. Wang, **E. Bulut**, and B. Szymanski *An Energy Efficient Location Service for Mobile Ad Hoc Networks*, in Proceedings of ISCIS 2010.

[C13] **E. Bulut**, Z. Wang, B. Szymanski *Cost Efficient Erasure Coding based Routing in Delay Tolerant Networks*, in Proceedings of ICC 2010, South Africa.

[C12] **E. Bulut**, Z. Wang, and B. Szymanski *The Effect of Neighbor Graph Connectivity on Coverage Redundancy in Wireless Sensor Networks*, in Proceedings of ICC 2010.

[C11] **E. Bulut**, Z. Wang, and B. Szymanski, *Impact of Social Networks on Delay Tolerant Routing*, in Proceedings of GLOBECOM, pp.1-6, Nov. 30-Dec. 4, Honolulu, HI, 2009.

[C10] Z. Wang, **E. Bulut**, and B. Szymanski, *Distributed Target Tracking with Directional Binary Sensor Networks*, in Proceedings of GLOBECOM, pp.1-6, Nov. 30-Dec. 4, Honolulu, HI, 2009.

[C9] Z. Wang, **E. Bulut**, and B. Szymanski, *Energy Efficient Collision Aware Multipath Routing for Wireless Sensor Networks*, in Proceedings of IEEE International Conference on Communications (ICC), pp. 1-5, 14-18 June, Dresden, 2009.

[C8] **E. Bulut**, J. Zheng<sup>Ⓢ</sup>, Z. Wang, and B. Szymanski, *Balancing the Cost-Quality Tradeoff in Cooperative Ad hoc and Sensor Networks*, in Proceedings of IEEE MILCOM, San Diego Convention Center, CA, November 2008.

[C7] **E. Bulut**, Z. Wang, and B. Szymanski, *Minimizing Average Spraying Cost for Routing in Delay Tolerant Networks*, Second Annual Conference of International Technology Alliance (ITA), ACITA, Imperial College London, September 2008.

[C6] **E. Bulut**, Z. Wang, and B. Szymanski, *Time Dependent Message Spraying for Routing in*



Intermittently Connected Networks, in Proceedings of GLOBECOM, pp. 1-6, New Orleans, Nov 30-Dec 4, 2008.

[C5] Z. Wang, **E. Bulut**, and B. Szymanski, Distributed Target Tracking with Imperfect Binary Sensor Networks, in Proceedings of GLOBECOM, pp. 1-6, New Orleans, Nov 30-Dec 4, 2008.

[C4] **E. Bulut**, Z. Wang, and B. Szymanski, Cost-Quality Tradeoff in Cooperative Sensor Networking, ICC2008 COCONET Workshop, 2008.

[C3] Z. Wang, **E. Bulut**, and B. Szymanski, A Distributed Cooperative Target Tracking with Binary Sensor Networks, ICC2008 CoopNet Workshop, 2008.

[C2] **E. Bulut**, and I. Korpeoglu, *DSSP: A Dynamic Sleep Scheduling Protocol for Prolonging the Lifetime of Wireless Sensor Networks*, Third IEEE International Workshop on Heterogeneous Wireless Networks, in conjunction with AINA, 2007.

[C1] **E. Bulut**, and T. Capin, *Key Frame Extraction from Motion Capture Data by Curve Saliency*, CASA 2007 - Computer Animation and Social Agents, 2007.

#### BOOK CHAPTERS

[B3] **E. Bulut**, *Delay Tolerant Mobile Sensor Networks: Opportunities and Challenges*, The Philosophy of Mission-Oriented Wireless Sensor Networks (H. Ammari Ed.) Springer Publisher, 2018.

[B2] B. O. Holzbauer, **E. Bulut**, B. Szymanski, *Incentivizing Participatory Sensing via Auction Mechanisms*, Chapter in Opportunistic Mobile Social Networks, Jie Wu and Yunsheng Wang, Eds, Taylor and Francis, CRC Press, 2014, to pp. 339-376.

[B1] **E. Bulut**, B. Szymanski, *Bio-inspired Multi-Period Routing Algorithms in Delay Tolerant Networks*, in Springer Lecture Notes in Computer Science (LNCS), vol. 6745, 2011.

#### HONORS AND AWARDS

Best-demo award in Percom, 2020.

Air Force Research Lab (AFRL), Summer Faculty Fellowship, 2019.

VCU Computer Science Departmental Teaching and Publication Awards, 2017, 2018, 2019.

Ranked with exceptional performance (top 5% of employees), Cisco Systems, 2014.

Promotion to Upper Level, Cisco Systems, 2013.

Online Course Accomplishments (Game Theory, Machine Learning - Coursera), 2013.

Spotlight (Best) Paper of TPDS Dec 2012 Issue.

IEEE Student Travel Grant, MASS 2010.

Full scholarship (tuition and stipend) during B.S., M.S. and Ph.D., 2001-2011.

Gold and Bronze medals in Nationwide Math Olympics, 1998-2000.

#### STUDENT SUPERVISION

**Aashish Dhungana:** (graduated in Dec 2020).

*Dissertation title: Leveraging Peer-to-Peer Energy Sharing for Resource Optimization in Mobile Social Networks*

**Fatih Yucel:** (graduated in Dec 2021).

*Dissertation title: Preference-Aware Task Assignment in Mobile Crowdsensing*

**Steven M. Hernandez:** (expected graduation date Dec 2022).

*Dissertation title: WiFi Sensing at the Edge to Improve the Scalability of Wireless Sensing Systems (GRFP fellow)*

**Amirahmad Chapnevis:** (doing Ph.D. since Fall 2019).

*Topic: IoT and UAV Communication*

**Md Touhiduzzaman:** (doing Ph.D. since Fall 2021).

*Topic: Health applications with WiFi Sensing*

**Soumita Ghosh:** (starting Ph.D. in Fall 2022).

*Topic: TBD*

**Member of Advisory Committee**

Hannaneh Barahouei Pasandi, Ph.D. Advisor: Tamer Nadeem (CS)

Chathurika Brahmana, Ph.D. Advisor: Milos Manic (CS)

Bahman Rashidi, Ph.D. Advisor: Carol Fung (CS)

Manziva Akanda Nishi, Ph.D., Advisor: Kostadin Damevski (CS)

Javad Abed, Ph.D., Advisor: Manoj Thomas (Information Systems)

Pulkit Rustgi, M.S., Advisor: Carol Fung (CS)

CONFERENCE AND  
WORKSHOP  
ORGANIZATION

**Organizing Committee**

IEEE Conference on Local Computer Networks, (LCN) 2022 (TPC co-chair), (LCN) 2021 (Publications chair), (LCN) 2020 (Symposium/Edas chair), 2019 (Student Grants/Edas chair), 2018 (Publicity chair).

IEEE NOMS 2023 (Doctoral Symposium co-chair).

IEEE LANMAN 2020 (Publications chair).

IEEE Resilience Week 2022, 2021, 2020 (Communications track chair).

IEEE WPSN 2020 (general chair), DCOSS workshop on Wirelessly Powered Systems and Networks.

**Technical Program Committee (TPC)**

IEEE WoWMoM (2022, 2021, 2020, 2019, 2018) - World of Wirelss, Mobile and Multimedia Networks.

IEEE ICC (2022, 2021, 2020, 2019, 2018) - International Conference on Communications.

IEEE IPCCC (2022) - International Performance Computing and Communications Conference.

IEEE Globecom (2022, 2021, 2020, 2019) - Global Communications Conference.

IEEE ICDCN (2023) - International Conference On Distributed Computing And Networking.

IEEE PIMRC (2019, 2018) - International Symposium on Personal, Indoor and Mobile Radio Communications.

IEEE VTC 2019-Fall, 2018-Fall, 2018-Spring, 2017-Fall - Vehicular Technology Conference.

MobiSPC, The 14th International Conference on Mobile Systems and Pervasive Computing.

IEEE Socialcom- The 9th International Conference on Social Computing and Networking.

IEEE DCOSS 2013 - Social Networks & Crowdsensing Track.

PerNem 2013 - The Third International Workshop on Pervasive Networks for Emergency Management, in conjunction with PerCom.

IQ2S 2013 - The 5th International Workshop on Information Quality and Quality of Service for Pervasive Computing, in conjunction with PerCom.

MobiPST 2015, 2013, 2012 - The International Workshop on Privacy, Security and Trust in Mobile and Wireless Systems , in conjunction with ICCN.

MobiWIS 2011 - The 8th International Conference on Mobile Web Information Systems - Mobile Web and Social Networks track.

INVITED TALKS

*5G V2X Communications and Security*, Idaho National Labs (INL), Wireless Security Workshop, Nov 2022.

*Rapid and Resilient Critical Data Sourcing for Public Safety and Emergency Response*, US-Ignite Research Summit, Austin, TX, June 2017.

*Limited Scale-Free Topologies Over Peer-to-Peer Networks*, Department of Computer Science Seminar Series, Virginia Commonwealth University, October 2016.

*Introduction to iOS Programming and Swift*, RamDev Talk Series, November, 2016.

*Mobile Social Networks: Challenges and Opportunities*, Department of Computer and Electrical Engineering, Virginia Commonwealth University, Dec 2015.

*Mobile Social Networks: Challenges and Opportunities*, Department of Computer Science & Engineering, University of Nevada, Reno, March 2014.

*Routing in DTNs*, Department of Computer Science and Information Systems, Texas A&M University-Commerce, May 2011.

*Opportunistic Routing Algorithms in Delay Tolerant Networks*, CReWMaN Lab, Computer Science and Engineering Department, University of Texas - Arlington, Dec 2010.

*Opportunistic Routing Algorithms in Delay Tolerant Networks*, Altschuler Lab, UTSouthwestern Medical Center, May 2010.

CONFERENCE &  
WORKSHOP  
PRESENTATIONS

*Loss-Aware Efficient Energy Balancing in Mobile Opportunistic Networks*, GLOBECOM, 2019.

*Joint Optimization of System and User oriented Task Assignment in Mobile Crowdsensing*, GLOBECOM, 2019.

*Dynamically Shared Wide-Area Cellular Communication for Hyper-dense IoT Devices*, Local Computer Networks (LCN) Workshops, 2018.

*Mobile Core Network Redimensioning for Efficient Resource Utilization*, INFOCOM Perfecto Workshop, 2017.

*Timely Information Dissemination with Distributed Storage in Delay Tolerant Mobile Sensor Networks*, INFOCOM Misenet Workshop, 2017.

*Identifying the Space Buddies to Track Lost Items*, SocialSens Workshop (CPSWeek), 2017.

*Mobile Energy Sharing through Power Buddies*, Wireless Communications and Networking Conference (WCNC), 2017.

*Rethinking Offloading WiFi Access Point Deployment from User Perspective*, Wireless and Mobile Computing, Networking and Communications (WiMob) SeuNet Workshop, 2016.

*Opportunistic Wireless Charging for Mobile Social and Sensor Network*, GLOBECOM MENS Workshop, 2014.

*Efficient Routing in Delay Tolerant Networks with Correlated Node Mobility*, International Conference on Mobile Ad-hoc and Sensor Systems (MASS), 2010. (Travel grant)

*Time Dependent Message Spraying for Routing in Intermittently Connected Networks*, GLOBECOM, 2008.

*Distributed Target Tracking with Imperfect Binary Sensor Networks*, GLOBECOM, 2008.

ACADEMIC  
SERVICE

**Associate Editor:** Elsevier Adhoc Networks, IEEE Access

**Guest Editor:** Elsevier Pervasive and Mobile Computing (PMC) Journal - Special Issue on Pervasive Mobile Sharing

**Panel review:** NSF (2021(2), 2020(1), 2018(2), 2017(2)), Singapore Land Transport Authority (LTA) (2018)

**Department committee:** Faculty Search and Recruitment, High School Programming Contest, RamHacks

**Journal Reviewer:** IEE/ACM Transactions on Networking, IEEE Transactions on Mobile Computing, ACM Transactions on Sensor Networks, IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Signal Processing, IEEE Transactions on Vehicular Technology, IEEE Transactions on Industrial Informatics, IEEE Transactions on Wireless Communications,

IEEE Transactions on Communications, IEEE Journal on Selected Areas in Communications, Computer Journal, Computer and Informatics Journal, IEEE Communications Magazine, IEEE Access, ACM Transactions on Sensor Networks, ACM Computing Surveys, Elsevier Computer Networks, Elsevier Adhoc Networks, Elsevier Computer Communications, Springer Wireless networks.

**Conference Reviewer:** Wowmom 2022-2018, Infocom 2022, 2017, LCN 2022-2016, Globecom 2022, 2017, 2012, 2011, ICC 2022-2010, VTC 2022-2016, PIMRC 2022-2018, Socialcom 2016, PerNem 2013, WCNC 2013, ACITA 08/09/10/11, FutureNetworks 2010.