RESUME – James Martin

PERSONAL DATA

Professor of Computer Science,
School of Computing
Clemson University
Clemson, SC 29634

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EDUCATION

Ph.D., North Carolina State University, 1999, Electrical Engineering (dissertation topic: end-to-end congestion avoidance for TCP, first to introduce and evaluate delay-based TCP)
M.S., Arizona State University, 1989, Computer Science
B.S., University of Illinois (Champaign/Urbana), 1983, Electrical Engineering

PROFESSIONAL EXPERIENCE

Clemson University, 2023-, Professor Emeritus, Emeritus College.
Clemson University, 2020-2023, Professor of Computer Science.
Clemson University, 2008-, Associate Professor of Computer Science.
Clemson University, 2002-2008, Assistant Professor of Computer Science.
Gartner, 2000 to 2002, consultant for Gartner Consulting Group. Office focused on telecommunications strategy and technology assessments. Engagements included network analysis studies, cybersecurity assessments, technical white papers for ISPs.
IBM Corporation, 1991 to 2000, Software Engineer. Contributions include Systems Network Architecture (SNA) architecture extensions: SNA over async, RTP (Rate-based Transport Protocol), Performance study of RTP and delay-based TCP, Device drivers for Unix and OS/2, team leader for the IBM Firewall product (AIX, OS/2).
Filenet Corporation, 1989 to 1991, Unix kernel/application developer, performance study their proprietary hardware/software platform (an image storage work flow product).
Motorola Government Electronics Division, 1983 to 1989, design engineer. Developed hardware and software for military communications systems.

CONSULTING EXPERIENCE

MIT Lincoln Labs, 2019-, Performance analysis of MAC protocols for multibeam directional radios, exploration of emerging content-centric networking systems for future tactical edge environments.
Comcast Corporation, 2022, Technical guidance in areas related to DOCSIS.
Cox Communications, 2020-2021, Modeling and analysis of low latency enhancements for DOCSIS 4.0.

Petitioner Cox Communications, Inc.
Exhibit 1004 - Page 1 of 19

BitRipple, 2020-2021, Technical guidance, Linux system performance, Board Member.
Vecima Corporation, 2017, Modeling and analysis of DOCSIS 3.1 standards using the open source ns2 simulator.
Cox Communications, 2013, Modeling bandwidth/spectrum consumption in emerging DOCSIS 3.0 based cable networks.
CableLabs, 2012, Modeling and analyzing the DASH streaming protocol over cable networks.
Cox Communications, 2010-2011, Network performance analysis.
CableLabs, 2009-2010, analyzing effects of buffer management techniques operating at upstream queues in a cable modem.
The South Carolina Educational Broadband Service Commission, 2008-2010, served as a technical expert to SC's statewide broadband wireless project.
CableLabs, 2006-2008, evaluated the impact of peer-to-peer traffic on Voice-over-IP in broadband cable networks.
South Carolina's Coalition for Mathematics and Science, South Carolina Department of Education (Math and Science Unit), 2006, provided technical assistance to select and deploy web collaboration tools.
CableLabs, 2005-2006, cable network traffic modeling and protocol evaluation. First to suggest the concept of two-queue AQM which evolved to the current low latency DOCSIS enhancement to DOCSIS3.1/4.0.
Expert Witness/Consultant to law firms, multiple engagements with different law firms serving as a technology advisor, an expert consultant or an expert witness supporting law teams on Intellectual Property disputes.

OTHER ORGANIZATIONS

SEMPRE, Inc., Advisory Role, 2021-2023.
BitRipple Inc., Advisory Board Member, 2020-2021.
CableLabs Inc, Advisory Role, contributor to DOCSIS 3.0 and 3.1 standards
WiMAX Forum, member and contributor to standards, 2006 – 2009.

MEMBERSHIPS

Member Association for Computing Machinery, ACM, (1989-).
Member IEEE and IEEE Communications Society, (1989-).
Member UPE (CS Honor Society), (1989-).

PUBLICATIONS

Book Chapters:

F. Jackson, R. Amin, Y. Fu, J. Gilbert, J. Martin, "A User Study of Netflix Streaming", *SpringerLink Lecture Notes in Computer Science*, vol. 9186, pp. 481-489 (2015).

N. Shah, D. Kouvatsos, J. Martin, S. Moser, "On the Performance Modeling and Optimization of DOCSIS HFC Networks", *Springerlink Lecture Notes in Computer Science*, vol. 5233, pp. 682-715 (2011).

Refereed Journal Publications:

A. Alsuhaim, A. Rayamajhi, J. Westall and J. Martin, "Adapting Time Headway in Cooperative Adaptive Cruise Control to Network Reliability," in *IEEE Transactions on Vehicular Technology*, vol. 70, no. 12, pp. 12691-12702, Dec. 2021

K. Chen, X. Xing, M. Palash, J. Liu, J. Martin, "Network-side Multipath Access Management in Wireless Networks with Software-defined Networking" IEEE *Transactions on Vehicular Technology*, 68(10), 10030-10033 (2019).

A. Bhargava, J. Martin, S. Babu, "Comparative Evaluation of User Perceived Quality Assessment of Design Strategies for HTTP-Based Adaptive Streaming", *ACM Transactions of Applied Perception*, 16(4), 22:1-22:20 (2019).

G. Hong, J. Martin, J. Westall, "Adaptive Bandwidth Binning for Bandwidth Management", *Elsevier Computer Networks*, 150 150-169 (2019).

M. Chowdhury, M. Rahman, A. Rayamajhi, S. Khan, M. Islam, Z. Khan, and J. Martin, "Lessons Learned from the Real-World Deployment of a Connected Vehicle Testbed," *Transportation Research Record: Journal of the Transportation Research Board*, 2672(22), 10-23 (2018).

P. Pisu, J. Martin, and Z. Biron, "A Control-Oriented Perspective For Security in Connected and Automated Vehicles", *ASME Dynamic Systems and Control Magazine*, 5(4), 17-20 (2017).

K. Dey, A. Rayamajhi, M. Chowdhury, P. Bhavsar, J. Martin, "Vehicle-to-vehicle (V2) and Vehicle-to-Infrastructure (V2I) Communication in a Heterogeneous Wireless Network – Performance Evaluation", *Elsevier Transportation Research Part C*, 68, 168-184 (2016).

R. Amin, J. Martin, "Assessing Performance Gains Through Global Resource Control of Heterogeneous Wireless Systems", *IEEE Transactions on Mobile Computing*, 15(2), 292-305 (2016).

J. Liu, Y. Fu, J. Martin, "Using Cloud Computing to Support Higher Education in Networks and Systems", *International Journal of Cloud Computing*, 5(1-2), 57-78 (2016).

G. Hong, J. Martin, J. Westall, "On Fairness and Application Performance of Active Queue Management in Broadband Cable Networks", *Elsevier Computer Networks*, 91(C), 390-406 (2015).

Petitioner Cox Communications, Inc.
Exhibit 1004 - Page 3 of 19

K. Xu, K. Wang, R. Amin, J. Martin, R. Izard, "A Fast Cloud-based Network Selection Scheme Using Coalition Formation Games in Vehicular Networks", *IEEE Transactions on Vehicular Technology*, 64(11), 5327-5339 (2015).

M. Toy, J. Martin, M Schmitt, V. Blaked, "Next generation cable networks with DOCSIS 3.1 technology", Guest Editorial, *IEEE Communications Magazine 53(3)*, 106-107 (2015).

B. Hamzeh, M. Toy, Y. Fu, J. Martin, "DOCSIS 3.1: Scaling broadband cable to Gigabit speeds", IEEE *Communications Magazine*, 53(3), 108-113 (2015).

A. Hussien, R. Amin, J. Martin, A. Eltawil, "Energy Aware Mapping for Reconfigurable Wireless MPSoCs" *IEEE Transactions on Very Large Scale Integration (VLSI) Systems*, 23(2), 392-396 (2015).

R. Amin, J. Martin, J. Deaton, L. DaSilva, A. Hussien, A. Eltawil, "Balancing Spectral Efficiency, Energy Consumption, and Fairness in Future Heterogeneous Wireless Systems with Reconfigurable Devices", *IEEE Journal on Selected Areas In Communications*, 31(5), 969-980 (2013).

J. Deng, R. Brooks, J. Martin, "Assessing the Effect of WiMAX System Parameter Settings on MAC-level Local DoS Vulnerability", *International Journal of Performability Engineering*, 8(2), 806-819 (2012).

J. Westall, J. Martin, "Performance Characteristics of an Operational WiMAX Network", *IEEE Transactions on Mobile Computing*, 10(7), 941-953 (2011).

Zhou, Y., Chowdhury, M., Martin, J., Wang, K.C., Westall, J., Kang, X.Y., "Field Performance Study of a Regional WiMAX Network for Intelligent Transportation System Applications," *Journal of Transportation Research Board*, Transportation Research Board, (2129), 121-128 (2009).

J. Martin, M. Westall, "A Simulation Model of the DOCSIS Protocol", *Simulation: Transactions of the Society for Modeling and Simulation International*, 83(2), 139-155 (2007).

Jiong Gong, David Reed, Terry Shaw, Daniel Vivanco, Jim Martin, "QAM Resource Allocation in Mixed-Format VoD Systems", *Journal of Communications*, 2(1), 1-9 (2007).

J. Martin, A. Nilsson, I. Rhee, "Delay-based Congestion Avoidance for TCP", *IEEE/ACM Transactions on Networking*, 11(3), 356-369 (2003).

Petitioner Cox Communications, Inc.
Exhibit 1004 - Page 4 of 19

Conference Proceedings (Reviewed):

M. Kaur, A.Razi, L. Cheng, R. Amin, J. Martin, "Design and Evaluation of an Application-Oriented Data-Centric Communication Framework for Emerging Cyber-Physical Systems", *Proceedings of CCNC 2023*, Jan, 2023.

D. Rice, S. Ozer, J. Martin, "Towards Predictable Low Latency DOCSIS Services", *Proceedings of the 2022 Fall Technical Forum SCTE Conference*, September, 2022.

J. Martin, M. Kaur, L. Cheng, A. Razzi, "Towards Connecting the Disconnected Internet", *Proceedings of the International Conference on Computer Communications and Networks (ICCCN*), July, 2022.

M. Kaur, R. Amin and J. Martin, "The Design and Validation of ICN-Enabled Hybrid Unmanned Aerial System", *Proceeding of the IEEE Military Communications Conference (MILCOM*), 2021.

M. Kaur, G. Ali, A. Rayamajhi, B. Ayalew, J. Martin, "Network Driven Performance Analysis in Connected Vehicular Networks", *Proceedings of the IEEE VTC Conference*, September, 2019.

V. Rastogi, R. Merco, M. Kaur, A., Rayamajhi, M. Gavelli, G. Papa, P. Pisu, S. Babu, A. Robb, and J. Martin, "An Immersive Vehicle-in-the-loop VR Platform for Evaluating Human-to-Autonomous Vehicle Interactions," *Proceedings of WCX: SAE World Congress Experience*, 2019.

K. Chen, Xin Xing, Mijanur Rahaman Palash, Jianwei Liu, and James Martin, "Improving Wireless Network Performance under MPTCP based Multipath Access", *Proceedings of the 43nd IEEE Conference on Local Computer Networks* (October 2018) **[best paper award: 1 out of 45].**

K.Chen, J. Liu, J. Martin, K. Wang, H. Hu, "Improving Integrated LTE-WiFi Network Performance with SDN-based Flow Scheduling", *Proceedings of the 2018 IEEE International Conference on Computer Communications and Networks (ICCCN 2018),* (July 2018).

A. Rayamajhi, Z. Biron, R. Merco, P. Pisu, J. Westall, J. Martin, "The Impact of Dedicated Short Range Communication on Cooperative Adaptive Cruise Control", *Proceedings of IEEE International Conference on Communications (ICC 2018),* (Kansas City, MO, May, 2018).

Petitioner Cox Communications, Inc.
Exhibit 1004 - Page 5 of 19

J. Liu, X. Xing, K. Chen, J. Martin, "On design challenges of an endpoint flow association optimization service in a multi-provider wireless heterogeneous network", *Proceedings of IEEE International Conference on Communications (ICC 2018), (*Kansas City, MO, May, 2018).

M. Rahman, M. Chowdhury, A. Rayamajhi, K. Dey, J. Martin, "Adaptive Queue Prediction Algorithm Using Edge-Centric Cyber Physical Platform in a Connected Vehicle Environment", *Transportation Research board's 97th Conferenc*e, (Washington DC, Jan, 2018).

Chowdhury, M., Rahman, M., Rayamajhi, A., Khan, S., Islam, M., Khan, Z., and Martin, J., "Lessons Learned from the Real-World Deployment of a Connected Vehicle Testbed," *Proceedings of the Transportation Research Board*, (Washington, D.C., Jan, 2018).

A. Rayamajhi, M. Rahman, M. Kaur, J. Liu, M. Chowdhury, H. Hu,J. McClendon, K. Wang, A. Gosain, J. Martin, "ThinGs In a Fog: System Illustration with Connected Vehicles", *Proceedings of the IEEE Vehicular Technology Conference (VCT'17),* (Sydney AU, June 2017).

M. Kaur, H. Hu, J. Martin, "Survey: Security in Vehicular Networks", *Proceedings of the International Conference on Connected Vehicles and Expo (ICCVE'16)*, (Seattle, WA, Sept 2016).

A. Sarker, C. Qiu, H. Shen, A. Gil, J. Taiber, M. Chowdhury, J. Martin, M. Devine, A. Rindos, "An Efficient Wireless Power Transfer System to Balance the State of Charge of Electric Vehicles", *Proceedings of the International Conference on Parallel Processing,* (Philadelphia, PA, August 2016).

K. Chen, R. Izard, H. Hu, K. Wang, J. Martin, J. Deng, "HetSDN: Exploiting SDN for Intelligent Network Usage in Heterogeneous Wireless Networks", *Proceedings of IEEE/ACM International Symposium on Quality of Service (IWQoS 2016),* (Beijing China, June 2016).

J. Liu, A. Rayamajhi, J. Martin, "Using MPTCP Subflow Association Control for Heterogeneous Wireless Network Optimization", *Proceedings of International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt2016),* (Tempe AZ, May 2016).

A. Alsuhaim, Z. Jing, J. Martin, "Design and Evaluation of Adaptive Switched Digital Video System", *IEEE Consumer Communications and Networking Conference (CCNC16),* (Las Vegas NV, January 2016).

F. Jackson, R. Amin, Y. Fu, J. Gilbert, J. Martin, "A User Study of Netflix Streaming", *Proceedings of Human Computer Interaction (HCI) International (HCI15),* (Los Angeles CA, August 2015).

Petitioner Cox Communications, Inc.
Exhibit 1004 - Page 6 of 19

J. Martin, G. Hong, J. Westall, “Managing Fairness and Application Performance with Active Queue Management in DOCSIS-based Cable Networks”, *Proceedings of ACM SIGCOMM Capacity Sharing Workshop (CSWS 2014),* (Chicago IL, August 2014).

R. Izard, A. Hodges, J. Liu, J. Martin, K. Wang, K. Xu, “An OpenFlowTestbed for the Evaluation of Vertical Handover Decision Algorithms in Heterogeneous Wireless Networks”, *Proceedings of 9th International Conference on Testbeds and Research Infrastructures for the Development of Networks & Communities (TRIDENTCOM 2014),* (Guangzhou China, May 2014).

R. Amin, J. Martin, H. Russell, "Assessing Performance Gains Via the Use of Global Resource Controller for Realistic Heterogeneous Wireless Networks", *Proceedings of the IEEE Wireless Communications and Networking Conference (WCNC 2014),* (Istanbul Turkey, April 2014).

J. Anderson, J. Martin, “Towards a System for Controlling Client-Server Traffic in Virtual Worlds using SDN”, *Proceedings of ACM Workshop on Network and Systems Support for Games (NetGames),* (Denver CO, December 2013).

A. Hussien, R. Amin, J. Martin, A. Eltawil, ”MPMAP: A High Level Synthesis and Mapping Tool for MPSoCs” *Proceedings of Asilomar Conference on Signals, Systems and Computers,* (Pacific Grove CA, November 2013).

C. Jackson, H. Russell, B. Wolf, J. Martin, "Investigation of MAC for a Hierarchical and Heterogeneous Multichannel Ad Hoc Network*", Proceedings of the Military communications Conference (MILCOM'13),* (San Diego CA, November 2013).

Amin, R., Jackson, F., Gilbert, J.E., Martin, J., & Shaw, T., “Assessing the Impact of Latency and Jitter on the Perceived Quality of Call of Duty Modern Warfare 2” , *Proceedings of the 15th International Conference (HCI International 2013),* (Las Vegas, NV, July 2013).

K. Xu, R. Izard, K. Wang, J. Martin, “Cloud-based Handoff as a Service for Heterogeneous Vehicular Networks with OpenFlow (short paper)”, *Proceedings of the GENI Research and Educational Experiment (GREE2013),* (Salt Lake City UT, March 2013).

J. Martin, Y. Fu, N. Wourms, T. Shaw, "Characterizing Netflix Bandwidth Consumption", *Proceedings of the IEEE International Conference on Computers and Communications (CCNC2013*), (Las Vegas, NV, January 2013).

R. Amin, J. Martin, X. Zhou, “Smart Grid Communication Using Next Generation Heterogeneous Wireless Networks”, *Proceedings of the Third IEEE International Conference on Smart Grid Communications (SmartGridCom),* (Tainan City, Taiwan, November 2012).

G. Hong , J. Martin, S. Moser, J. Westall, "Fair Scheduling on Parallel Bonded Channels with Intersecting Bonding Groups", *Proceedings of the IEEE International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (Mascots),* (Washington DC, August 2012).

J. Martin, R. Amin, A. Eltawil, A. Hussien, "Spectral Efficiency and Energy Consumption Tradeoffs for Reconfigurable Devices in Heterogeneous Wireless Systems", *Proceedings of the IEEE WCNC2012 Conference,* (Paris, France, April 2012).

R. R. Brooks, K.-C. Wang, J. Martin, K. Cameron, J. Deng, and L. Yu, "WiMAX: Bandwidth Contention Resolution – Vulnerability to Denial of Service Attacks," *Proceedings of the First GENI Research and Educational Experiment Workshop,* (Los Angeles, CA, March 2012).

A. Hussien, A. Eltawil, R. Amin and J. Martin, "Energy Aware Task Mapping Algorithm For Heterogeneous MPSoC Based Architectures", *Proceedings of International Conference on Computer Design (ICCD),* (Montreal, Quebec, October 2011).

J. Martin, R. Amin, A. Eltawil, A. Hussien, "Using Reconfigurable Devices to Maximize Spectral Efficiency in Future Heterogeneous Wireless Systems", *Proceedings of the IEEE ICCCN 2011 Conference,* (Maui, HI, July 2011).

J. Martin, R. Amin, A. Eltawil, A. Hussien, "Limitations of 4G Wireless Systems", *Proceedings of the Wireless Symposium @ Virginia Tech,* (Blacksburg VA, June 2011).

J. Martin, J. Westall, J. Finkelstein, G. Hart, T. Shaw, G. White, R. Woundy, "Cable Modem Buffer Management in DOCSIS Networks", *Proceedings of the IEEE Sarnoff 2010 Symposium,* (Princeton University, Princeton NJ, April 2010).

S. Moser, J. Martin, J. Westall, B. Dean, "The Role of Max-min Fairness in DOCSIS 3.0 Downstream Channel Bonding", *Proceedings of the IEEE Sarnoff 2010 Symposium,* (Princeton University, Princeton NJ, April 2010).

J. Martin, B. Li, W. Pressly, J. Westall, "WiMAX Performance at 4.9 GHz", *Proceedings of the 2010 IEEE Aerospace Conference,* (Big Sky, Montana, March 2010).

J. Martin, J. Westall, "Evaluating WiMAX for Public Safety", *Proceedings of the Wireless Symposium @ Virginia Tech,* (Blacksburg, VA, June 2010).

M. Juang, K. Wang, J. Martin, "A Measurement Study on Link Capacity of a High Stress IEEE 802.11b/g Network", *Proceedings of the 2008 IEEE International Conference on Computer Communications and Networks (ICCCN 2008),* (St. Thomas, Virgin Islands, August 2008).

M. Fenn, M. Murphy, J. Martin, S. Goasguen "An Evaluation of KVM for Use in Cloud Computing" , *Proceedings of the 2nd International Conference on the Virtual Computing Initiative (ICVCI08),* (RTP, NC, May 2008).

W. Spearman, J. Gao, J. Martin, "Traffic Prioritization for Lunar Surface Networking Using an Adaptive 802.11e Algorithm", *Proceedings of the 2008 IEEE Aerospace Conference,* (Big Sky, Montana, March 2008).

E. Harney, S. Goasguen, J. Martin, M. Murphy, M. Westall, "The Efficacy of Live Virtual Machine Migrations Over the Internet", *Proceedings of the 2nd International Workshop on Virtualization Technologies in Distributed Computing (VTDC 2007),* (Reno, Nevada, November 2007).

J. Gong, D. Vivanco, J. Martin, "Simulation Study of the Spectral Capacity Requirements of Switched Digital Broadcast", *Proceedings of the 2007 IEEE Broadnets,* (RTP, NC, September 2007).

J. Martin, M. Westall, "Assessing the Impact of BitTorrent on DOCSIS Networks", *Proceedings of the 2007 IEEE Broadnets,* (RTP, NC, September 2007).

W. Spearman, J. Martin, "A Distributed Adaptive Algorithm for QoS in 802.11e Wireless Networks", *Proceedings of the 2007 International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS'07),* (San Diego, CA, July 2007).

J. Martin, M. Westall, "Validating an 'ns' Simulation Model of the DOCSIS Protocol", *Proceedings of the 2006 International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS'06),* (Calguary, CA, July 2006).

J. Gong, D. Reed, T. Shaw, D. Vivanco, J. Martin, "VoD QAM Resource Allocation Algorithms", *Proceedings of the IEEE/IFIP-Networking Conference,* (Coimbra Portugal, May 2006).

S. Kirtane, J. Martin, "Application Performance Prediction in Autonomic Systems", *Proceedings of the ACM SouthEast Conference,* (Melbourne, Florida, March 2006).

Scott Moser, Jim Martin, "Assessing Denial of Service Vulnerabilities in DOCSIS", *Proceedings of the ACM SouthEast Conference,* (Melbourne, Florida, March 2006).

A. Swaminathan, J. Martin, "Fairness Issues in Hybrid 802.11b/e Networks*", Proceedings of the IEEE Consumer Communications and Networking Conference,* (Las Vegas, NV, January 2006).

R. Geist, J. Martin, J. Westall, V. Yalla, "Performance Tuning of Gigabit Network Interfaces*", Proceedings of the 31st Annual International Conference of the Computer Measurement Group (CMG 2005),* (Orlando, Florida, December 2005).

Petitioner Cox Communications, Inc.
Exhibit 1004 - Page 9 of 19

N. Shah, D. Kouvatsos, J. Martin, S. Moser, "A Tutorial on DOCSIS: Protocol and Performance Models", *Proceedings of the International Working Conference on Performance Modeling and Evaluation of Heterogeneous Networks*, (Ikley, UK, July 2005).

J. Martin, M. Westall, V. Rajasekaran, "Virtual Machine Effects on Network Traffic Dynamics", *Proceedings of the IEEE International Performance, Computing, and Communications Conference*, (Phoenix, AZ, April 2005).

S. Howard, J. Martin, "DOCSIS Performance Evaluation: Piggybacking versus Concatenation", *Proceedings of the ACM Southeast Conference*, (Kennesaw State, GA, March 2005).

J. Martin, "The Impact of the DOCSIS 1.1/2.0 MAC Protocol on *TCP", Proceedings of the IEEE Consumer Communications and Networking Conference*, (Las Vegas, NV, January 2005).

J. Martin, M. Westall, V. Rajasekaran, "On the Impact of Virtual Machine Overhead on TCP Performance", *Proceedings of the IASTED International Conference on Communication and Computer Networks*, (Boston, MA, November 2004).

J. Martin, H. Karlapudi, "Web Application Performance Prediction", *Proceedings of the IASTED International Conference on Communication and Computer Networks*, (Boston, MA, November 2004).

R. Geist, J. Martin, J. Westall, "Small Aggregations of ON/OFF Traffic Sources", *Proceedings of the IASTED International Conference on Communication and Computer Networks*, (Boston, MA, November 2004).

S. Biyani, J. Martin, "A Comparison of TCP-Friendly Congestion Control Protocols", *Proceedings of the International Conference on Computers Communications and Networks 2004*, (Chicago, IL, October 2004).

J. Martin, "The Interaction Between the DOCISS 1.1/2.0 MAC Protocol and TCP Application Performance", *Proceedings of the International Working Conference on Performance Modeling and Evaluation of Heterogeneous Networks*, (Ikley, UK, July 2004).

J. Martin, "Managing Best Effort IP Networks over Heterogeneous WANs", *Proceedings of the International Working Conference on Performance Modeling and Evaluation of Heterogeneous Networks*, (Ikley, UK, July 2004).

J. Martin, N. Shrivastav, "Modeling the DOCSIS 1.1/2.0 MAC Protocol", *Proceedings of the 2003 International Conference on Computer Communications and Networks*, (Dallas TX, October 2003).

Petitioner Cox Communications, Inc.
Exhibit 1004 - Page 10 of 19

J. Martin, A. Nilsson, "On Service Level Agreements for IP Networks", in *Proceedings of INFOCOM,* (New York, New York, July 2002).

J. Martin, A. Nilsson, I. Rhee, "The Incremental Deployability of RTT-based Congestion Avoidance for High Speed TCP Internet Connections", in *Proc. of ACM SIGMETRICS 2000, International Conference on Measurement and Modeling of Computer Systems* (ACM SIGMETRICS), (Santa Clara, CA, 2000).

J. Martin, A. Nilsson, "On Congestion Avoidance for TCP/IP Networks", *Proceedings of the 15th IFIP World Computer Congress*, (Budapest, Hungary, 1998).

J. Martin, A. Nilsson, "Congestion Control in HPR", in *Proceedings of IEEE GLOBECOM,* (Phoenix, AZ, 1997).

Technical Reports (available at https://people.cs.clemson.edu/~jmarty/papers/papers.html) :

J. Martin, G. Comert, M. Kaur, A. Alsuhaim, "Uncertainty Quantification of Cyber Attacks on Connected Vehicles and Infrastructure (Part 1)", United States Department of Transportation, National Transportation Library, Report #56057, Available online at https://rosap.ntl.bts.gov/view/dot/56057, June, 2020.

J. Martin, KC Wang, I. Seskar, "SciWiNet: Evaluating the Efficacy of a Mobile Virtual Network Operator for the Research Community – Project Report", August, 2017. Available online: https://people.cs.clemson.edu/~jmarty/papers/SciWiNetProjectRecap.pdf

J. Martin, Y. Fu, G. Hong, "On the Efficacy of the Dynamic Adaptive Streaming over HTTP (DASH) Protocol - Extended Version", April, 2013.

J. Martin, M. Westall, R. Amin, "Mulicasting Video in Dense 802.11g Networks Using Application FEC", 2010

J. Westall, J. Martin, "An Introduction to Galois Fields and Reed-Solomon Coding", October 2010.

M.Bidwell, "MAC Layer DoS Vulnerabilities", 2006

J. Martin, A. Nilsson, "A Comparison of RTP and TCP/Reno Transport Protocols", IBM TR 29.2337, December 1997.

J. Martin, A. Nilsson, "The Evolution of Congestion Control in TCP/IP networks", IBM TR 29.2277, June 1997.

J. Martin, "Optimal MultiLink Transmission Group Scheduling Algorithms, IBM TR 29.1967, August 1997.

AWARDS

January 30, 2020, **Informal recognition** by Clemson students through results from the National Education Benchmarking Assessment Survey as "**a faculty who has made a positive difference to them during their time at Clemson University"**

Award, Wiley Publisher for my **services to Transactions on Emerging Telecommunications Technologies**, July 2019.

Best paper award : K. Chen, Xin Xing, Mijanur Rahaman Palash, Jianwei Liu, and James Martin, "Improving Wireless Network Performance under MPTCP based Multipath Access", *Proceedings of the 43nd IEEE Conference on Local Computer Networks* (October 2018) **[best paper award: 1 out of 45].**

Clemson University **Board Of Trustees Award** for Excellence, received 2/8/18.

Three **IBM Faculty Awards**: 2004, 2013, 2015.

Competition Winner: Winner of Department of Transportation's Connected Vehicle Technology Challenge, June 2011, http://connectedvehicle.challenge.gov/submissions.

PRESENTATIONS

"Thoughts on a LEO Satellite Mesh Network for Broadband Access", Invited Talk, SpaceX, March 2020.

"Emerging Application Systems and the Need for the Citizen's Wireless Internet (CWI)", Invited Talk MIT Lincoln Labs, June 2019.

"USIgnite: "Enabling Connected Vehicle Applications Through Advanced Networking" Floor Demo, *USIgnite Application Summit*, Austin TX, June 2017.

"ThinGs In a Fog (TGIF): A Framework to Support MultiDomain Research in the Internet of Things", Presented at the *CAIDA Workshop on Active Internet Measurements (AIMS2017)*, March 2017.

Petitioner Cox Communications, Inc.
Exhibit 1004 - Page 12 of 19

"Enabling Connected Vehicle Research in a Campus Environment", Presented at *GENI Network Innovators Community Event, (GENI/NICE),* December 2016.

"USIgnite: "Enabling Connected Vehicle Applications Through Advanced Networking" Floor Demo, *USIgnite Application Summit, Co-Located with Smart Cities Innovation s Summit*, Austin TX, June 2016.

"Software Defined Networks for Connected Vehicles", *Presented at the 5'th Annual Automotive Summit*, Greenville, SC, Febuary 2016.

"Enabling Connected Vehicle Applications Through Advanced Networking", Presented at the Cellular Wireless Research Updates, *GENI/Network Innovators Community Event (GENI/NICE)*, November 2015.

"SciWiNet: A Large Scale Wireless Testbed for the Academic Community", Presented at the *CAIDA Workshop on Active Internet Measurements (AIMS2014)*, March 2014.

"SciWiNet: a Science Wireless Network for the Research Community", *4G LTE for Research Panel, Mobicom 2013*, October 2013.

"Building Cooperative Heterogeneous Wireless Networks With Re-Configurable Devices", *Keynote at Workshop on Cooperative Heterogeneous Networks (coHetNet),* ICCCN 2011, August 2011.

"Evaluating IEEE 802.16 Broadband Wireless as a Communications Infrastructure for Public Safety Activities", Presented at the *International Association of Chiefs of Police 32nd Annual Law Enforcement Information Management Training Conference*, Nashville, TN, May 2008.

"Public Safety Requirements for WiMAX", *WiMAX Forum, Application Architecture Working Group*, Washington DC, April 2007.

"Modeling a MAC Scheduler: Experiences with a DOCSIS Cable Network Simulation Model", *WiMAX Forum, Application Architecture Working Group*, San Deigo, CA, July 2006.

"Understanding the Impact of BitTorrent on Cable Networks", *National Cable and Telecommunication Association's National Show*, Atlanta, GA, April 2006.

"DOCSIS Performance Issues", *National Cable and Telecommunication Association's National Show*, San Francisco, CA, April 2005.

PATENTS

An Optimal Multilink Scheduling Algorithm, United States, patent number 6178448, granted January 23, 2001.

Adapting Receiver Thresholds to Improve Rate-Based Flow Control, United States, patent number 6657954, granted December 2, 2003.

Optimal Link Scheduling for Multiple Links, United States, patent number 6862618, granted March 1, 2005.

SPONSORED RESEARCH

Current Funding:

-

Past Funding:

"Network and Compute System Requirements for Ultra-reliable, Low Latency Applications Systems", MIT Lincoln Labs, Principal Investigator, $230,000 (August 15 2019 – May 15 2022).

"CPS:Synergy: Security of Distributed Cyber-Physical Systems with Connected Vehicle Applications", NSF, Co-PI (P. Pisu PI, R. Brooks Co-PI), $998,581 (November 2015 - December 2020).

"US Ignite: Track 1: Enabling Connected Vehicle Applications through Advanced Network Infrastructure", NSF, Principal Investigator, (R Chowdhury, K. Wang Co-PIs), $598,582 (September 2015 – December 2020).

"Uncertainty Quantification of Cyber Attacks on Intelligent Traffic Signals", US DOT, Regional Center for Connected Multimodal Mobility, Principal Investigator, $67,500 (Oct 2017 – December 2020).

"Extreme Orange: Engaging Clemson Students in Systems of Discovery", IBM Faculty Award, Principal Investigator, (E. Kraemer, J. McClendon Co-PIs), $200,000 (August 2015 -December 2019).

"DOCSIS 3.0/3.1 Studies", Huawei Corporation, Principal Investigator, $199,000 (August 2013 - December 2016).

"EAGER: Collaborative Research: SciWiNet: a Science Wireless Network For the Research Community", NSF, Principal Investigator (KC Wang Co-PI), $298,090 (August 2013 – December 2016).

Petitioner Cox Communications, Inc.
Exhibit 1004 - Page 14 of 19

"Understanding and Optimizing Dynamic Adaptive Streaming over HTTP in the Internet", Comcast Corporation, Principal Investigator, $95,000 (August 2013 – August 2016).

"Using Apache Virtual Classroom Lab (VCL) for Networking/Systems/Security Courses at Clemson University", IBM Faculty Award, Principal Investigator, $30,000 (June 2013 – December 2015).

"GENI Spiral 3 : GENI WiMAX at Clemson", NSF, Co-PI (KC Wang PI), $300,000, (January 2011 – December 2015).

"Assessing Perceived Quality of Dash-Based IPTV Broadcasts: Methods and Human Factors", Intel Research , Co-PI, (J. Gilbert PI), $50,000, (June 2013 - December 2014).

"Assessing Perceived Quality of Dash-Based IPTV Broadcasts: Methods and Human Factors", CableLabs Research Grant, Principal Investigator, (J. Gilbert Co-PI), $50,000, (June 2012 - December 2013).

"Developing the CyberInfrastructure to Support the Emerging Smart Grid", IBM Faculty Award, Principal Investigator, $20,000, (September 2011 – December 2012).

"Correlating the Perceived Quality of Networked Games to Broadband Cable Network Design Parameters", CableLabs Research Grant, Principal Investigator, (J. Gilbert Co-PI), $30,000, (May 2011 - May 2012).

"Broadcasting Video Content in Dense 802.11g Sports and Entertainment Venues", Cisco Research Grant, Principal Investigator (M. Westall Co-PI), $95,000, (August 2010 – December 2012).

"EAGER:Collaborative:Towards a Unified Wireless Network Involving Reconfigurable Devices", NSF, Principle Investigator, $75,000, (September 2009 – September 2011).

iTiger, internally funded CyberInfrastructure research project $150,000 plus equipment donations from Cisco ($150,000) and Apple $50,000, (Jan 2008 – December 2009).

"DOCSIS 3.0 Scheduling Algorithms", Cisco Research Grant, Principal Investigator, (M.Westall Co-PI), $98,000, (August 2007 – December 2011).

"CableLabs DOCSIS Research", CableLabs Corporation, Principal Investigator, $14,630, (May 2007 – December 2007).

"Evaluation XEN and Microsoft Virtual Server", BMW Corporation, Principal Investigator, (S. Goasguen Co-PI), $12,000, (January 2007 - December 2007).

DELL Equipment Grant, Co-PI (S. Goasguen PI), $20,000, (December 2006).

Petitioner Cox Communications, Inc.
Exhibit 1004 - Page 15 of 19

"Evaluating IEEE 802.16 Broadband Wireless as a Communications Infrastructure for Public Safety Activities", Department of Justice National Institute of Justice, Principal Investigator, (M. Westall Co-PI), $300,000, (October 2006 –October 2008).

"Evaluating IEEE 802.11 and 802.16 Wireless MAC Protocols for use in Future NASA Space Exploration Missions", NASA/South Carolina Space Grant REAP program, Principal Investigator, $30,000, (May 2006 – December 2007).

"Developing a Prediction-based Service Management System", IBM University Partnership Proposal, Principal Investigator, $30,000, (August 2005-August 2006).

Equipment gift from Cisco, Principal Investigator (M. Westall Co-PI), $20,000, (January 2005).

"Developing Application Level Prediction Services in a WebSphere and Globus Grid Environments", IBM University Partnership Proposal, Principal Investigator, $40,000, (August 2004 - August 2005).

IBM SUR Equipment Grant, $125,000, augmented by $100,000 with a cost matching grant from the Provost, Co-PI, (M. Westall Co-PI and R. Geist PI), (June 2004).

GRADUATE STUDENT ADVISING

PhD Graduates

Manveen Kaur (PHD CS), "SNAP: A Software-Defined & Named-Data Publish-Subscribe Framework for Emerging Wireless Application Systems", (August, 2022).
Jianwei Liu (PHD CS), "Unified Wireless Systems Involving Multiple Operators", (Dec, 2019).
Anjan Rayamajhi (PHD ECE), (CoAdvising with Dr Harlan Russell, ECE) "Exploring Smart Infrastructure Concepts to Improve the Reliability and Functionality of Safety Oriented Connected Vehicle Applications", (August 2019).
Mizan Raman (PHD Civil Eng), (CoAdvising with Dr Ronnie Chowdhury, Civil Eng) "Queue Warning Connected Vehicle Application: Assessing the Impacts of Heterogeneous Wireless Infrastructure", (Dec, 2018).
Gongbing Hong (PHD CS), Bandwidth Management in Emerging DOCSIS-based Broadband Access Networks, (December 2015).
Rahul Amin (PHD ECE), "Towards Viable Large Scale Heterogeneous Wireless Networks", (August 2013).
Scott Moser (PHD CS), "Scheduling Algorithms in DOCSIS-based networks", (August 2011).

Petitioner Cox Communications, Inc.
Exhibit 1004 - Page 16 of 19

Masters Graduates

Adam Hodges (MSCS), "Broadband Mapping Emerging Heterogeneous Wireless Networks", (August 2014).
Eric Harney (MSCS), "Modeling the Network Impacts of Live Migration in XEN", (December 2009).
Rob Johnson (MSCS), "Evaluating the Use of SNMP as a Wireless Network Monitoring Tool for IEEE 802.11 Wireless Networks", (May 2009).
Will Spearman (MSCS), "Distributed Adaptive Algorithm for 802.11e QoE", (December 2007).
Ben Sangster (MSCS), "DoS Attacks in DOCSIS-based Networks", (August 2007).
Himadeepa Karlapudi (MSCS), "Web Application Performance Prediction", (August 2004).
Vinod Rajasekaran (MSCS), "Impact of Virtual Machine Overhead on TCP Performance", (August 2004).
Shobhana Kirtane (MSCS), "Predicting the Performance of the gridFTP Application over Wide Area Grid Environments", (May 2004).

Current Graduate Advising

Jason Anderson (PHD CS), (CoAdvising with Dr Amy Apon), "Impacts of latency on HPC applications", (Dec, 2023).
Adil Alsuhaim (PHD CS), , "Robust Platooning Using Smart Infrastructure" , (May, 2022).
Manveen Kaur (PHD CS), "Smart Infrastructure to Support Critical Application Systems" (May, 2022).

TEACHING EXPERIENCE

Courses Taught at Clemson:

CPSC 1110, Computer Programing in "C", Fall 2018.
CPSC 3600, Distributed and Network Programming, Spring 2020, 2018, Fall 2017, Spring 2012, Fall 2012, Spring 2010-2011, Spring 2006-2007, Summer 2005,Spring/Fall 2004-2005.
CPSC 4240/6240, Linux System Administration and Security, Spring 2014-2019.
CPSC 8510, Software Systems for Data Communications, Fall 2016, Fall 2012-2014.
CPSC 8520 (formerly CPSC 8260), Internet Protocols, Fall 2019, Fall 2015, Spring 2014, Fall 2006-2011, Spring 2009, Spring 2003-2006, Fall 2002.
CPSC 8540 (formerly CPSC 8810), Internet Performance Analysis, Spring 2008-2012, Fall 2003-2006.

New Course Development at Clemson:

CPSC 8540, Internet Performance Analysis, Fall 2003-2006, Spring 2008-2012.

Petitioner Cox Communications, Inc.
Exhibit 1004 - Page 17 of 19

Courses Taught at North Carolina State University:

CSC/ECE 573, Internet Protocols, Spring 2001.

UNIVERSITY AND PUBLIC SERVICE

Committees:

School of Computing, Director's Advisory Committee (chair) 2019-2022.
School of Computing, Undergraduate Affairs Committee, 2019-2022.
School of Computing PhD Curriculum Committee, 2008-2009.
School of Computing, Faculty Advisory Board, 2018-2019.
School of Computing, External/Industrial Affairs Committee, 2014-2017.
School of Computing, Honors Program Director, 2012-2018.
School of Computing, Upsilon Pi Epsilon (UPE) Faculty Advisor, 2012-2019.
School of Computing, Space (lab and classroom) Committee, 2014-2017.
School of Computing, Faculty Search Committee, 2010-2013, 2015.
School of Computing, Sabbatical Review Committee, 2013-2019.
School of Computing, PhD Graduate Student Recruiting Committee, 2010-2011.
School of Computing, Graduate Affairs Committee, 2009-2010.
Department Research Committee, 2003-2004.
Department Computing Facilities Committee, 2004-2007.

Other service:

*Advisory Board Member, BitRipple 2020-.
*Editorial Board Member, Wiley's Internet Technology Letters, 2020-.
*Editorial Board Member, MDPI, Internet of Things Open-Access Journal, 2020-.
* IEEE International Conference on Mobile Ad-Hoc and Smart Systems Program Committee Member, 2019-.
*Review Committee, Urban Transportation Systems and Mobility, Frontiers in Sustainable Cities 2019-.
* Editorial committee for Transactions on Emerging Telecommunications, 2018-.
*Advisor for NSF Research Experience for Undergraduates (REU) students 2004-.
*Invited participant, NSF's PAWR Platform POWDER Workshop, June, 2018.
*Adhoc NSF Proposal Review, June 2018.
*Invited Session Chair, CAIDA Workshop on Active Internet Measurements, 2014,2017.
*IEEE ICCCN Program Committee Member, 2008-2017.
*IEEE Globecom Program Committee Member, 2015-2017.
*IEEE Communications Magazine, Guest Editor, 2015.
*Vice-Chair of the IEEE Cable Networks and Services Subcommittee (CNS), 2015-2017.
*NSF proposal review panel member, 2004, 2005, 2007, 2010, 2011, 2017.
*Guest editor, IEEE Communications Magazine, Feature on "Next Generation Cable Networks with DOCSIS 3.1 Technology", March 2015.

Petitioner Cox Communications, Inc.
Exhibit 1004 - Page 18 of 19

*Participant NSF PhantomNet Users' Workshop, Feb 2015.
*Participant NSF Workshop on Future Research Infrastructure for the Wireless Edge
*IEEE TridentComs Program Committee Member, 2014-2015.
*Organizing Committee Member, NSF Workshop on Vehicular Sensing (DriveSense'14), Old Dominion, November 2014.
*Publicity Chair, IEEE International Conference on Network Protocols, October 2014.
*Participant DOCSIS 3.1 Active Queue Management Working Group,
*Author of sections of CableLabs DOCSIS 3.1 specifications.
*Clemson's Representative to NSF's Access Computing program, 2012- 2020.
*NSF Future Heterogeneous Networks Workshop, Mountain View, CA, March 2011.
*Public safety communications technology outreach through collaboration with DOJ National Institute of Justice, 2008 - 2015.
*Clemson's Emerging Scholars, an outreach program to provide rural South Carolina high school students Computer Science and Internet skills, Summers 2005 - 2012.
*Program committee member, IEEE Broadnets, 2007.
*Advisory Board, International Conference on Performance Modeling and Evaluation of Heterogeneous Networks, Ikley, UK, July 2005 - 2006.

Last update: 10/10/2023