

Eric J. Rozner, PhD

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INTERESTS

My interests are computer systems in general, with an emphasis on datacenter networking, cloud computing, wireless network management, and mobile computing. At the University of Colorado Boulder, I lead projects on serverless computing and wireless network management. My work builds a quality-of-service framework for serverless applications and designs new primitives to optimize serverless workloads. I have received an NSF grant to research how next-generation wireless networks can use a wide range of sensor and contextual data to more effectively manage spectrum. At IBM, my research primarily focused on datacenter network management. I built tools and platforms to ensure the operational efficiency of networks as they increase in size, speed, and complexity. These systems minimize network congestion, monitor the network, enforce consistent routing updates, and isolate tenants in virtualized environments. I also enjoyed working on mobile computing projects at IBM, where I generally focused on how to enable rich interactions between humans and their co-located devices. Before IBM, I worked on wireless network management at AT&T and in graduate school. I implemented tools to address the fundamental challenges of wireless communication. Specifically, I built tools to plan coverage areas, assign frequency, minimize loss, model interference, and reduce energy usage of mobile devices. In general, I appreciate studying the technical details of a system to obtain additional insights into a problem and seek simplicity when working towards a solution. I am passionate about innovation, authoring over 50 patents and 33 publications.

EDUCATION

PhD in Computer Science	December 2011
Master of Sciences in Computer Science	May 2008
Advisor: Professor Lili Qiu	
Thesis: <i>Combating Loss in Wireless Networks</i>	
The University of Texas at Austin , Austin, TX, USA	
Bachelor of Science in Computer Science	May 2005
Bachelor of Science in Mathematics	
The University of Wisconsin-Madison , Madison, WI, USA	

RESEARCH POSITIONS

University of Colorado Boulder	Boulder, CO, USA
Assistant Professor	August 2018 to Present
Tenure-track Assistant Professor in the Computer Science department. Research thrusts in cloud computing, mobile computing, edge computing, serverless computing, and network management. Developed new graduate courses in datacenter networking and cloud computing. Oversaw over \$380,000 in NSF funding and gifts. Advised five PhD students and 18 Masters students.	

Google

Software Engineer

Remote, USA

January 2023 to Present

Design and deployment of network fabric topologies to support large-scale machine learning (ML) workloads. ML-based Traffic Engineering within Google datacenter fabrics and network hardware upgrade planning to ease congestion.

Meta Platforms

Software Engineer

Remote, USA

July 2021 to January 2023

Improved audio/video calling across Meta's suite-of-apps (Messenger, Facebook, Portal, Instagram) by designing and implementing FEC-based network probing, designing a server-based temporal layer adaption scheme, rate-limiting non-call background traffic, and reducing Media Not Flowing cases.

IBM Research

Research Staff Member, Master Inventor

Austin, TX, USA

June 2013 to August 2018

Defined and lead projects in datacenter network management and mobile computing. My research built a comprehensive set of network management tools to provide insights into network behavior, enforce state changes in the network, implement policies on customer traffic, harden isolation in virtualized environments, and substantially improve performance by reducing network congestion. Papers published in NSDI (2018), SIGCOMM (2014, 2015, 2016) and HotSDN (2014, x2). My interest in mobile computing investigated how technology can enable humans to more naturally interact with their environments. Paper published in CHI. Over 65 patents filed, or to be filed, with USPTO.

AT&T Labs - Research

Senior Member of the Technical Staff

Florham Park, NJ, USA

December 2011 to May 2013

Built cellular network management tools to plan heterogeneous network deployments. Specifically, developed a rapid channel-sounding system on software-defined radios to quickly and cheaply determine coverage areas of potential *small cell* access nodes (cell towers characterized by limited transmission ranges) in LTE networks. Started projects in distributed spectrum sensing and capacity planning through social media analysis. Published one paper and was granted one patent.

The University of Texas at Austin

Graduate Research Assistant

Austin, TX, USA

September 2005 to December 2011

Advisor: Lili Qiu. Built wireless network management tools to combat loss, model interference, manage spectrum, and improve performance in wireless networks. Developed wireless technologies on a variety of real platforms, including Windows Mesh Connectivity Layer, Click router, Madwifi wireless drivers, and USRP software-defined radios. Published two journal papers (TMC, ToN), seven conference papers (including ICNP, CoNEXT, SIGCOMM, SIGMETRICS, MobiHoc, and MobiCom), and four workshop papers.

Microsoft Research

Research Intern

Redmond, WA, USA

June 2010 to September 2010

Mentor: Ranveer Chandra. Investigated potential of 802.11n technologies for real-time, high-definition video streaming. Performed detailed study of loss under high-performance wireless links in a living room environment. Profiled next-generation 802.11n vendor solutions and modified wireless drivers to obtain insights on characteristics of wireless loss.

Work completed over the summer laid the foundation for the wireless controller protocol design for the Xbox One.

Microsoft Research India

Research Intern

Bangalore, India

April 2009 to June 2009

Mentors: Vishnu Navda, Ramachandran Ramjee. Developed and implemented network-based scheduling algorithms to realize power savings for mobile devices in Wi-Fi networks. Work published in MobiSys and featured in front page article on CNN.com.

The University of Wisconsin-Madison

Undergraduate Research Assistant

Madison, WI, USA

January 2005 to September 2005

Mentor: Suman Banerjee. Developed systems for coordinating spectrum management in wireless networks and improving spatial reuse in 802.11 networks by utilizing partially-overlapping channels. Work published in DySPAN and IMC.

The University of Wisconsin-Madison

Undergraduate Research Assistant

Madison, WI, USA

January 2004 to January 2005

Mentor: David DeWitt. Modified API of EMC Centera fixed-content storage system to create an XML database for storage metadata. Benchmarked results and presented to company representatives.

TEACHING

The University of Colorado Boulder

CSCI 4273 Network Systems

Boulder, CO, USA

Spring 2021

Instructor for undergraduate network systems course. Responsibilities included lecturing; developing the syllabus, lecture material, and homework; and holding office hours.

The University of Colorado Boulder

CSCI 5273 Network Systems

Boulder, CO, USA

Summer 2020

Instructor for graduate network systems course. Responsibilities included lecturing; developing the syllabus, lecture material, and homework; and holding office hours.

The University of Colorado Boulder

CSCI 7000 Topics in Datacenter Networking

Boulder, CO, USA

Fall 2019

Instructor for graduate datacenter networking course. Responsibilities included lecturing; developing the syllabus, lecture material, and homework; and holding office hours.

The University of Colorado Boulder

CSCI 5273 Network Systems

Boulder, CO, USA

Spring 2019

Instructor for graduate network systems course. Responsibilities included lecturing; developing the syllabus, lecture material, and homework; and holding office hours.

The University of Colorado Boulder

CSCI 4/5253 Datacenter Scale Computing

Boulder, CO, USA

Fall 2018

Instructor for mixed graduate and undergraduate datacenter scale computing course. Responsibilities included lecturing; developing the syllabus, lecture material, and homework; and holding office hours. Course was last taught in Fall 2014, overhaul of syllabus and

content required due to practical nature of class. Course also contained distance learning section.

The University of Texas at Austin Austin, TX, USA
CS356 Computer Networks Instructor Spring 2015
Instructor for undergraduate computer networking course. Responsibilities included lecturing twice per week; developing the syllabus, lecture material, and homework; and holding office hours.

The University of Texas at Austin Austin, TX, USA
CS386 Wireless Networks Teaching Assistant Fall 2011
Graded students' critiques of journal and conference papers and held office hours for a graduate class in wireless networking.

The University of Texas at Austin Austin, TX, USA
CS108 Intro to Linux Assistant Instructor 2009-2011
Instructor for Introduction to Linux undergraduate course. Responsibilities included lecturing once per week; developing the syllabus, lecture material, and homework; and holding office hours. Course content focused on teaching students to administer a Linux-based system and become familiar with tools to successfully use Linux as a programming environment. Student-submitted instructor ratings were 4.3, 4.4 and 4.4 out of a 5.0 scale (school average was 4.0/5.0).

The University of Texas at Austin Austin, TX, USA
CS375 Compilers Teaching Assistant Summer 2009
Graded homework and held office hours for an undergraduate class in compilers.

The University of Wisconsin-Madison Madison, WI, USA
Volunteer Tutor 2004
Provided drop-in tutoring assistance to students in mathematics and computer science.

PUBLICATIONS

Journals

1. Eric Rozner, Mi Kyung Han, Lili Qiu, Yin Zhang. "Model-driven Optimization of Opportunistic Routing." *IEEE/ACM Transactions on Networking (ToN)*, 2012.
2. Eric Rozner, Jayesh Seshadri, Yogita Ashok Mehta, Lili Qiu. "SOAR: Simple Opportunistic Adaptive Routing Protocol for Wireless Mesh Networks." *IEEE Transactions on Mobile Computing (TMC)*, 2009.

Conferences

1. Shazal Irshad, Ria Thakkar, Eric Rozner, Eric Wustrow. "You Can't See Me: Providing Privacy in Vision Pipelines via Wi-Fi Localization." *IEEE International Symposium on Local and Metropolitan Area Networks (LANMAN)*, London, UK, July 2023.
2. Shazal Irshad, Eric Rozner, Bo Chen, Apurv Bhartia. "A Picture is Worth 1,000 Millimeters: Combining Vision and Wi-Fi to Improve Localization." *IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM)*,

Boston, MA, USA, June 2023.

3. Greg Cusack, Mazyar Nazari, Sepideh Goodarzy, Erika Hunhoff, Prerit Oberai, Eric Keller, Eric Rozner, Richard Han. “Escra: Event-driven, Sub-second Container Resource Allocation.” *IEEE International Conference on Distributed Computing Systems (ICDCS)*, Bologna, Italy, July 2022.
4. Mazyar Nazari, Sepideh Goodarzy, Shivakant Mishra, Eric Rozner, Eric Keller. “Optimizing and Extending Serverless Platforms: A Survey.” *International Conference on Software Defined Systems (SDS)*, December 2021.
5. Sepideh Goodarzy, Mazyar Nazari, Richard Han, Eric Keller, Eric Rozner. “Resource Management in Cloud Computing Using Machine Learning: A Survey.” *IEEE International Conference on Machine Learning and Applications (ICMLA)*, Miami, FL, USA, December 2020.
6. Ali Tariq, Austin Pahl, Sharat Nimmagadda, Eric Rozner, Siddharth Lanka. “Sequoia: Enabling Quality-of-Service in Serverless Computing.” *ACM Symposium on Cloud Computing (SoCC)*, Renton, WA, USA, October 2020.
7. Blake Caldwell, Youngbin Im, Sepideh Goodarzy, Sangtae Ha, Richard Han, Eric Keller, Eric Rozner. “FluidMem: Full Flexible and Fast Memory Disaggregation for the Cloud.” *IEEE International Conference on Distributed Computing Systems (ICDCS)*, Singapore, November 2020.
8. Junaid Khalid, Eric Rozner, Wes Felter, Cong Xu, Karthick Rajamani, Alex Ferreira, Aditya Akella. “Iron: Isolating Network-based CPU in Container Environments.” *USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, Renton, WA, USA, April 2018.
9. Keqiang He, Eric Rozner, Kanak Agarwal, Yu Gu, Wes Felter, John Carter, Aditya Akella. “AC/DC TCP: Virtual Congestion Control Enforcement for Datacenter Networks.” *ACM SIGCOMM Conference*, Florianopolis, Brazil, August 2016.
10. Chungkuk Yoo, Inseok Hwang, Eric Rozner, Yu Gu, Robert Dickerson. “SymmetriSense: Enabling Near-Surface Interactivity on Glossy Surfaces using a Single Commodity Smartphone.” *ACM CHI*, San Jose, CA, USA, May 2016.
11. Keqiang He, Eric Rozner, Kanak Agarwal, Wes Felter, John Carter, Aditya Akella. “Presto: Edge-based Load Balancing for Fast Datacenter Networks.” *ACM SIGCOMM Conference*, London, UK, August 2015.
12. Jeff Rasley, Brent Stephens, Colin Dixon, Eric Rozner, Wes Felter, Kanak Agarwal, John Carter, Rodrigo Fonseca. “Planck: Millisecond-scale Monitoring and Control for Commodity Networks.” *ACM SIGCOMM Conference*, Chicago, IL, USA, August 2014.
13. Muhammad Nazmul Islam, Byoung-Jo Kim, Paul Henry, Eric Rozner. “A Wireless Channel Sounding System for Rapid Propagation Measurements.” *IEEE International Conference on Communications (ICC)*, Budapest, Hungary, June 2013.
14. Tianji Li, Mi Kyung Han, Apurv Bhartia, Lili Qiu, Eric Rozner, Yin Zhang, Brad Zarikoff. “CRMA: Collision-Resistant Multiple Access.” *ACM International Conference on Mobile Computing and Networking (MobiCom)*, Las Vegas, NV, USA, September 2011.

15. Mi Kyung Han, Apurv Bhartia, Lili Qiu, Eric Rozner. “Optimized Overlay-based Opportunistic Routing.” *ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc)*, Paris, France, May 2011.
16. Eric Rozner, Mi Kyung Han, Lili Qiu, Yin Zhang. “Accurate Model-Driven Optimization of Opportunistic Routing.” *ACM International Conference on Measurement and Modeling of Computer Systems (SIGMETRICS)*, San Jose, CA, USA, June 2011.
17. Eric Rozner, Vishnu Navda, Ramachandran Ramjee, Shravan Rayanchu. “NAPman: Network-Assisted Power Management for WiFi Devices.” *ACM International Conference on Mobile Systems, Applications and Services (MobiSys)*, San Francisco, CA, USA, June 2010.
18. Yi Li, Lili Qiu, Yin Zhang, Ratul Mahajan, Eric Rozner. “Predictable Performance Optimization for Wireless Networks.” *ACM SIGCOMM Conference*, Seattle, WA, USA, August 2008.
19. Eric Rozner, Anand Padmanabha Iyer, Yogita Mehta, Lili Qiu, Mansoor Jafry. “ER: Efficient Retransmission Scheme for Wireless LANs.” *ACM International Conference on Emerging Networking Experiments and Technologies (CoNEXT)*, New York, NY, USA, December 2007.
20. Eric Rozner, Yogita Ashok Mehta, Aditya Akella, Lili Qiu. “Traffic-Aware Channel Assignment in Wireless LANs.” *IEEE International Conference on Network Protocols (ICNP)*, Beijing, China, October 2007.
21. Vladimir Brik, Eric Rozner, Suman Banerjee, Paramvir Bahl. “DSAP: A Protocol for Coordinated Spectrum Access.” *IEEE Dynamic Spectrum Access Networks (DySPAN)*, Baltimore, MD, USA, November 2005.
22. Arunesh Mishra, Eric Rozner, Suman Banerjee, William Arbaugh. “Exploiting Partially Overlapped Channels in Wireless Networks: Turning a Peril Into an Advantage.” *ACM Internet Measurement Conference (IMC)*, Berkeley, CA, USA, October 2005.

Workshops, Posters, and Demos

1. Sepideh Goodarzy, Eric Keller, Maziyar Nazari, Eric Rozner, Richard Han, Mark Dras, Young Choon Lee, Deborah Richards. “Capturing and Predicting User Frustration to Support a Smart Operating System.” *ACM International Conference on Intelligent User Interfaces (IUI)*, March 2023.
2. Sepideh Goodarzy, Maziyar Nazari, Richard Han, Eric Keller, Eric Rozner. “SmartOS: Towards Automated Learning and User-adaptive Resource Allocation in Operating Systems.” *ACM SIGOPS Asia-Pacific Workshop on Systems (APSys)*, August 2021.
3. Erika Hunhoff, Shazal Irshad, Vijay Thurimella, Ali Tariq, Eric Rozner. “Proactive Serverless Function Resource Management.” *ACM Sixth International Workshop on Serverless Computing (WoSC)*, TU Delft, Netherlands, December 2020.
4. Shazal Irsahd, Eric Rozner, Apurv Bhartia, Bo Chen. “Rethinking Wireless Network Management Through Sensor-driven Contextual Analysis.” *ACM Workshop on Mobile Computing Systems and Applications (HotMobile)*, Austin, TX, USA, March 2020.
5. Shazal Irsahd, Eric Rozner, Apurv Bhartia, Bo Chen. “Poster: Rethinking Wireless Network Management Through Sensor-driven Contextual Analysis.” *ACM Workshop*

on *Mobile Computing Systems and Applications (HotMobile)*, Austin, TX, USA, March 2020.

6. Chungkuk Yoo, Saiyma Sarmin, Inseok Hwang, Eric Rozner, Minsik Cho. “Poster: DeepFind: Sensor-driven Inference Acceleration for Continuous Deep Mobile Vision Applications.” *ACM Workshop on Mobile Computing Systems and Applications (HotMobile)*, Austin, TX, USA, March 2020.
7. Erika Hunhoff, Eric Rozner. “Poster: Network Connection Optimization for Serverless Workloads.” *USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, Santa Clara, CA, USA, February 2020.
8. Greg Cusack, Maziyar Nazari, Sepideh Goodarzy, Prerit Oberai, Eric Rozner, Eric Keller, Richard Han. “Poster: Efficient Microservices with Elastic Containers.” *ACM International Conference on emerging Networking EXperiments and Technologies (CoNEXT)*, Orlando, FL, USA, December 2019.
9. Inseok Hwang, Eric Rozner, Chungkuk Yoo. “Demo: Telekinetic Thumb Summons Out-of-reach Touch Interface Beneath Your Thumbtip.” *ACM International Conference on Mobile Systems, Applications and Services (MobiSys)*, Seoul, Korea June 2019.
10. Zaid Al-Ali, Sepideh Goodarzy, Ethan Hunter, Sangtae Ha, Richard Han, Eric Keller, Eric Rozner. “Making Serverless Computing More Serverless.” *ACM International Workshop on Serverless Computing (WoSC)*, San Francisco, CA, USA, July 2018.
11. Kanak Agarwal, Colin Dixon, Eric Rozner, John Carter. “Shadow MACs: Scalable Label-switching for Commodity Ethernet.” *ACM SIGCOMM Workshop on Hot Topics in Software Defined Networking (HotSDN)*, Chicago, IL, USA, August 2014.
12. Kanak Agarwal, Eric Rozner, Colin Dixon, John Carter. “SDN traceroute: Tracing SDN Forwarding without Changing Network Behavior.” *ACM SIGCOMM Workshop on Hot Topics in Software Defined Networking (HotSDN)*, Chicago, IL, USA, August 2014.
13. Jeff Rasley, Brent Stephens, Colin Dixon, Eric Rozner, Wes Felter, Kanak Agarwal, John Carter, Rodrigo Fonseca. “Low-latency Network Monitoring via Oversubscribed Port Mirroring.” *Open Networking Summit (Research Track)*, Santa Clara, CA, USA, March 2014.
14. Anand Padmanabha Iyer, Gaurav Deshpande, Eric Rozner, Apurv Bhartia, Lili Qiu. “Fast Resilient Jumbo Frames in Wireless LANs.” *IEEE International Workshop on Quality of Service (IWQoS)*, Charleston, SC, USA, July 2009.
15. Yi Li, Lili Qiu, Yin Zhang, Ratul Mahajan, Zifei Zhong, Gaurav Deshpande, Eric Rozner. “Effects of Interference on Throughput of Wireless Mesh Networks: Pathologies and a Preliminary Solution.” *ACM Workshop on Hot Topics in Networks (HotNets-VI)*, Atlanta, GA, USA, November 2007.
16. Eric Rozner, Jayesh Seshadri, Yogita Ashok Mehta, Lili Qiu. “SOAR: Simple Opportunistic Routing in Wireless Mesh Networks.” *IEEE Workshop on Wireless Mesh Networks (WiMesh)*, Reston, VA, USA, September 2006.
17. Eric Rozner, Yogita Ashok Mehta, Aditya Akella, Lili Qiu. “Traffic-Aware Channel Assignment in Wireless LANs.” *ACM Mobile Computing and Communications Review (MC2R), Special Feature on MobiCom 2006 SRC Posters*, September 2006.

AWARDS

- Best Paper Award, You Can't See Me: Providing Privacy in Vision Pipelines via Wi-Fi Localization, IEEE LANMAN, 2023.
- Best Paper Award, A Picture is Worth 1,000 Millimeters: Combining Vision and Wi-Fi to Improve Localization, IEEE WoWMoM, 2023.
- Ada Lovelace Think Big Award, Meta, 2022.
- Watson and Crick Collaboration Award, Meta, 2022.
- Best Poster Award, Rethinking Wireless Network Management Through Sensor-driven Contextual Analysis, ACM HotMobile, 2020.
- Best Poster Runner-up Award, DeepFind: Sensor-driven Inference Acceleration for Continuous Deep Mobile Vision Applications, ACM HotMobile, 2020.
- IEEE INFOCOM Distinguished TPC Member Award, 2017-2019.
- IBM 20th Level Plateau Award, 2018.
- IBM Invention Development Team (IDT) Award, 2017.
- Master Inventor, IBM, 2016.
- Manager's Choice Award, IBM, 2015-2017.
- Technical Recognition Award, IBM, 2015.
- Vice President Labs Recognition Award, AT&T, 2012.
- James C. Browne Graduate Fellowship, UT-Austin, 2010.
- Graduate Student Professional Development Award, UT-Austin, 2007, 2011.
- Micro-electronics and Computer Development (MCD) Fellowship, UT-Austin, 2005.
- Dean's Excellence Award, UT-Austin, 2005.

MEDIA COVERAGE

- **How Wi-Fi Drains Your Cell Phone**, MIT Technology Review, June 2010.
(<http://www.technologyreview.com/communications/25651/page1/?a=f>)
- **New Ways To Double Phone Battery Life**, CNN.com, June 2010.
(<http://www.cnn.com/2010/TECH/innovation/06/24/mobile.phone.battery.life/>)

ACTIVITIES

Service

- Computer Science Computing Committee Co-chair, University of Colorado, 2018-2020.
- Junior Faculty/Researcher Panel, ACM HotMobile, 2020.
- Participant and Scribe, NSF Extreme Wireless Visioning Workshop, 2017.
- Invention Development Team, IBM, 2016-2018.
- NSF Proposal Review Panel (2015, 2018).
- New Hire Committee, AT&T, 2012 (Core member), 2013 (Chair).
- Masters Admissions Committee, UT-Austin Computer Sciences (UTCS), 2010.
- Executive Committee, UTCS Graduate Representative Association, 2005-2006.

- Organizer, UTCS GradFest, 2006 (visitation weekend for accepted graduate students).
- Volunteer: Blue Dog Rescue, Austin Pets Alive, Divine Canines Therapy Dog Team.

Steering Committee

- ACM Symposium on SDN Research (SOSR). 2020-Present.

General Chair

- ACM Symposium on SDN Research (SOSR 2019).

Technical Program Committee Chair

- Co-chair, ACM Symposium on SDN Research (SOSR 2020).

Co-Organizer

- PhD Forum on Mobile Systems, Applications, and Services. ACM MobiSys 2011.

Invited Panelist

- Junior Faculty/Researcher Panel, ACM HotMobile (2020).
- Future of Serverless in Industry and Academia, Workshop on Serverless Computing (2018).
- Emerging Directions in Communications, Texas Wireless Summit (2017).

Finance Chair

- ACM Conference on Mobile Computing and Networking (MobiCom 2019).

Publicity/Social Media Chair

- ACM Conference on Embedded Networked Sensor Systems (SenSys 2015).
- IEEE Symposium on Local and Metropolitan Area Networks (LANMAN 2014).
- ACM Workshop on Wireless Network Testbeds, Experimental Evaluation and Characterization (WiNTECH 2012).
- IEEE International Conference on Network Protocols (ICNP 2012).

Publications Chair

- IEEE Conference on Sensing, Communication, and Networking (SECON 2016).

Web Chair

- IEEE Conference on Sensing, Communication, and Networking (SECON 2012-2013).
- ACM Workshop on Wireless Network Testbeds, Experimental Evaluation and Characterization (WiNTECH 2012).

Poster/Demo Chair

- ACM Workshop on Mobile Computing Systems and Applications (HotMobile 2016).

Technical Program Committee

- IEEE International Conference on Network Protocols (ICNP 2016-2019, 2022-2024).

- ACM Conference on Mobile Computing and Networking (MobiCom 2013, 2015, 2017-2018, 2020-2021, 2023).
- ACM International Conference on emerging Networking EXperiments and Technologies (CoNEXT 2018-2021, 2023).
- ACM Conference on Mobile Systems, Applications, and Services (MobiSys 2020, 2022).
- Workshop on Serverless Computing (WoSC 2019-2023).
- ACM Workshop on Mobile Computing Systems and Applications (HotMobile 2016, 2019-2021).
- IEEE Conference on Computer Communications (INFOCOM 2016-2020).
- ACM Symposium on SDN Research (SOSR 2017, 2019).
- IEEE International Conference on Computer Communication and Networks (ICCCN 2018).
- IEEE Conference on Sensing, Communication, and Networking (SECON 2015, 2018).
- IEEE International Conference on Distributed Computing Systems (ICDCS 2018).
- IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid 2018).
- IEEE Conference on Communication Systems and Networks (COMSNETS 2015-2016, 2018).
- ACM Workshop on Challenged Networks (CHANTS 2016-2017).
- International Teletraffic Congress (ITC 2017).
- ACM Workshop for Context Sensing and Activity Recognition (2015).
- IEEE Symposium on New Frontiers in Dynamic Spectrum Access Networks (DySPAN 2012). Demonstrations Committee.

External Review Committee

- ACM International Conference on Mobile Systems, Applications, and Services (MobiSys 2018).

Technical Reviewer

- IEEE Transactions on Networking (2009, 2014-2016, 2019).
- IEEE Transactions on Mobile Computing (2007-2012).
- The International Journal for the Computer and Telecommunications Industry (2010).
- IEEE Transactions on Parallel and Distributed Systems (2009).
- EURASIP Journal on Wireless Communications and Networking (2007).
- Wireless Networks (2007, 2009).
- IEEE Network (2007).

PATENTS

Over 65 patents filed, or to be filed, with USPTO at IBM. Granted patents listed below:

1. US-10768997-B2. Tail latency-based job offloading in load-balanced groups, Kanak B. Agarwal, Wenzhi Cui, Wesley M. Felter, Yu Gu, Eric J. Rozner. 2020-09-08
2. US-10700978-B2. Offloading at a virtual switch in a load-balanced group, Kanak B. Agarwal, Wenzhi Cui, Wesley M. Felter, Yu Gu, Eric J. Rozner. 2020-06-30
3. US-10660560-B2. Predictive fall prevention using corrective sensory stimulation, Su Liu, Inseok Hwang, Eric J. Rozner, Jinho Lee. 2020-05-26
4. US-10655907-B2. Content and context aware microscopic cooling optimization for refrigerators, Inseok Hwang, Su Liu, Eric J. Rozner, Chungkuk Yoo. 2020-05-19
5. US-10628222-B2. Allocating compute offload resources, Su Liu, Eric J. Rozner, Chin Ngai Sze, Yaoguang Wei. 2020-04-21
6. US-10620434-B2. Multi-layer imaging, Inseok Hwang, Su Liu, Eric J. Rozner, Chin Ngai Sze. 2020-04-14
7. US-10606468-B2. Dynamic image compensation for pre-touch localization on a reflective surface, Yu Gu, Inseok Hwang, Su Liu, Eric J. Rozner, Yaoguang Wei, Chungkuk Yoo. 2020-03-31
8. US-10585525-B2. Adaptive notification modifications for touchscreen interfaces, Su Liu, Eric J. Rozner, Inseok Hwang, Kanak Behari Agarwal. 2020-03-10
9. US-10581804-B2. End-to-end caching of secure content via trusted elements, Su Liu, Eric J. Rozner, Chin Ngai Sze, Yaoguang Wei. 2020-03-03
10. US-10574569-B2. Middlebox tracing in software defined networks, Kanak B. Agarwal, Eric J. Rozner. 2020-02-25
11. US-10558749-B2. Text prediction using captured image from an image capture device, Inseok Hwang, Su Liu, Eric J. Rozner, Chin Ngai Sze. 2020-02-11
12. US-10531332-B2. Virtual switch-based congestion control for multiple TCP flows, Kanak B. Agarwal, John Carter, Wesley M. Felter, Yu Gu, Eric J. Rozner, Keqiang He. 2020-01-07
13. US-10518131-B2. Normalizing scores of one or more predefined segments to establish pace comparisons of actors that participate in physical activities on the predefined segments, Su Liu, Eric J. Rozner, Chin Ngai Sze, Yaoguang Wei. 2019-12-31
14. US-10484485-B2. Context-aware task processing for multiple devices, Su Liu, Eric J. Rozner, Chin Ngai Sze, Yaoguang Wei. 2019-11-19
15. US-10425338-B2. Virtual switch-based congestion control for datacenter networks, Kanak B. Agarwal, John Carter, Wesley M. Felter, Yu Gu, Keqiang He, Eric J. Rozner. 2019-09-24
16. US-10382264-B2. Fog computing for machine translation, Inseok Hwang, Su Liu, Eric J. Rozner, Chin Ngai Sze. 2019-08-13
17. US-10318072-B2. Intelligent prevention of unintended mobile touch screen interaction, Inseok Hwang, Su Liu, Eric J. Rozner, Chin Ngai Sze. 2019-06-11

18. US-10319253-B2. Cognitive workload awareness, Inseok Hwang, Su Liu, Eric J. Rozner, Chin Ngai Sze. 2019-06-11
19. US-10310258-B2. Multi-layer imaging, Inseok Hwang, Su Liu, Eric J. Rozner, Chin Ngai Sze. 2019-06-04
20. US-10278576-B2. Behind-eye monitoring using natural reflection of lenses, Inseok Hwang, Su Liu, Eric J. Rozner, Chin Ngai Sze, Chungkuk Yoo. 2019-05-07
21. US-10241827-B1. Accounting and enforcing non-process execution by container-based software transmitting data over a network, Wesley M. Felter, Junaid Khalid, Karthick Rajamani, Eric Rozner, Cong Xu. 2019-03-26
22. US-10238333-B2. Daily cognitive monitoring of early signs of hearing loss, Inseok Hwang, Su Liu, Eric J. Rozner, Chin Ngai Sze. 2019-03-26
23. US-10243845-B2. Middlebox tracing in software defined networks, Kanak B. Agarwal, Eric J. Rozner. 2019-03-26
24. US-10237586-B2. Video segment manager, Inseok Hwang, Su Liu, Eric J. Rozner, Chin Ngai Sze. 2019-03-19
25. US-10237186-B2. Enforcing datacenter-level congestion control, Kanak B. Agarwal, John Carter, Wesley M. Felter, Yu Gu, Keqiang He, Eric J. Rozner. 2019-03-19
26. US-10230640-B2. Normalized flow value-based congestion control, Kanak B. Agarwal, John Carter, Wesley M. Felter, Yu Gu, Keqiang He, Eric J. Rozner. 2019-03-12
27. US-10223352-B2. Text prediction using multiple devices, Inseok Hwang, Su Liu, Eric J. Rozner, Chin Ngai Sze. 2019-03-05
28. US-10225192-B2. Identifying a local congestion control algorithm of a virtual machine, Kanak B. Agarwal, John Carter, Wesley M. Felter, Yu Gu, Keqiang He, Eric J. Rozner. 2019-03-05
29. US-10218566-B2. Proactive input method engine management for edge services based on crowdsourcing data, Su Liu, Eric J. Rozner, Chin Ngai Sze, Yaoguang Wei. 2019-02-26
30. US-10198773-B2. Cooperative evidence gathering, Justin G. Manweiler, Jan S. Rellermeyer, Eric J. Rozner, James Xenidis. 2019-02-05
31. US-10175770-B2. Proactive input method editor switching, Su Liu, Eric J. Rozner, Chin Ngai Sze, Yaoguang Wei. 2019-01-08
32. US-10176695-B2. Real-time water safety analysis based on color-movement tracking, Su Liu, Eric J. Rozner, Chin Ngai Sze, Yaoguang Wei. 2019-01-08
33. US-10172141-B2. System, method, and storage medium for hierarchical management of mobile device notifications, Inseok Hwang, Su Liu, Eric J. Rozner, Chin Ngai Sze. 2019-01-01
34. US-10168976-B2. Dynamic display arrangement, Eric J. Rozner, Inseok Hwang, Su Liu, Chin Ngai Sze. 2019-01-01
35. US-10157607-B2. Real time speech output speed adjustment, Inseok Hwang, Su Liu, Eric J. Rozner, Chin Ngai Sze. 2018-12-18
36. US-10127198-B2. Real-time text layout conversion control and management on a mobile electronic device, Inseok Hwang, Su Liu, Eric J. Rozner, Chin Ngai Sze. 2018-11-13

37. US-10091344-B2. Displaying virtual target window on mobile device based on user intent, Inseok Hwang, Janani Mukundan, Eric J. Rozner, Chungkuk Yoo. 2018-10-02
38. US-10045252-B2. Virtual switch-based congestion control for multiple TCP flows, Kanak B. Agarwal, John Carter, Wesley M. Felter, Yu Gu, Eric J. Rozner, Keqiang He. 2018-08-07
39. US-10042550-B2. Displaying virtual target window on mobile device based on directional gesture, Inseok Hwang, Janani Mukundan, Eric J. Rozner, Chungkuk Yoo. 2018-08-07
40. US-10009222-B2. Input method engine management for edge services, Su Liu, Eric J. Rozner, Chin Ngai Sze, Yaoguang Wei. 2018-06-26
41. US-10003942-B2. Automatic friend connection within a social network, Su Liu, Eric J. Rozner, Chin Ngai Sze, Yaoguang Wei. 2018-06-19
42. US-9971483-B2. Contextual-based real-time text layout conversion control and management on a mobile electronic device, Inseok Hwang, Su Liu, Eric J. Rozner, Chin Ngai Sze. 2018-05-15
43. US-9851773-B1. Automatic configuration of power settings, Su Liu, Eric J. Rozner, Chin Ngai Sze, Yaoguang Wei. 2017-12-26
44. US-9854032-B2. Context-aware task offloading among multiple devices, Su Liu, Eric J. Rozner, Chin Ngai Sze, Yaoguang Wei. 2017-12-26
45. US-9823782-B2 . Pre-touch localization on a reflective surface, Yu Gu, Inseok Hwang, Su Liu, Eric J. Rozner, Yaoguang Wei, Chungkuk Yoo. 2017-11-21
46. US-9793939-B2 . Automatic self-protection for a portable electronic device, Maggie Phung, Eric J. Rozner, Chin Ngai Sze, Zhennan Wang. 2017-10-17
47. US-9733764-B2 . Tracking of objects using pre-touch localization on a reflective surface, Yu Gu, Inseok Hwang, Su Liu, Eric J. Rozner, Yaoguang Wei, Chungkuk Yoo. 2017-08-15
48. US-9736673-B2. Method to automatically infer user signature through contextual learning, Su Liu, Eric J. Rozner, Chin Ngai Sze, Yaoguang Wei. 2017-08-15
49. US-9729448-B2 . Congestion detection using a differentiated packet pair, Kanak B. Agarwal, Wesley M. Felter, Keqiang He, Eric J. Rozner. 2017-08-08
50. US-9723495-B2. Architecture for radio access network virtualization, Sarat Puthenpura, Ioannis Broustis, Leonid Razoumov, Eric Rozner. 2017-08-01
51. US-9703841-B1. Context-based notifications in multi-application based systems, Inseok Hwang, Su Liu, Eric J. Rozner, Chin Ngai Sze. 2017-07-11
52. US-9674297-B2 . Handling packet reordering at a network adapter, Kanak B. Agarwal, Wesley M. Felter, Keqiang He, Eric J. Rozner. 2017-06-06
53. US-9665567-B2. Suggesting emoji characters based on current contextual emotional state of user, Su Liu, Eric J. Rozner, Chin Ngai Sze, Yaoguang Wei. 2017-05-30

STUDENT INTERNS

- IBM
 - Chungkuk Yoo (2015, 2017), KAIST, *Google PhD Fellowship*.
 - Junaid Khalid (2016), UW-Madison.
 - Wenzhi Cui (2015), UT-Austin.
 - Keqiang He (2014, 2015), UW-Madison, *Lawrence Landweber NCR Fellowship*.
 - Brent Stephens (2013), Rice University, *IBM PhD Fellowship*.
 - Jeff Rasley (2013), Brown University, *NSF Graduate Research Fellowship*.
- AT&T
 - Muhammad Nazmul Islam (2012), Rutgers University.

INVITED TALKS

- New Primitives for Automatically-Scaled Software Systems. Keynote address. IEEE/ACM Serverless To sErve moRe at Scale (STEERS) Workshop. 2022.
- Hardening Isolation and Generalizing Abstractions in Serverless Environments. HP Labs. 2019.
- Hardening Isolation and Generalizing Abstractions in Serverless Environments. UW-Madison Datacenter Networking Workshop. 2018.
- Making Serverless Computing More Serverless. Workshop on Serverless Computing. 2018.
- Network Management for Multi-Tenant Cloud Environments. KAIST, UT Austin. 2018.
- Comprehensive Network Management. CU-Boulder, UW-Madison, UC-Davis, University of Minnesota. 2017.
- Edge-based Network Management to Support High Bandwidth, Low Latency Applications in the Datacenter. Duke University. 2016.

THESIS AND DISSERTATION COMMITTEES

- Doctoral Dissertation Committee
 - Hafiz M. Mohsin Bashir, Tufts University, “Reducing Tail Latency Using Duplication: a Multi-layered Approach”, 2023.
 - Shazal Irshad, CU-Boulder, “Joining Wireless and Vision Techniques for Improving Contextual Awareness”, 2023 (Chair).
 - Zaid Alai, CU-Boulder, “Elastic Process: Joint Disaggregation of Memory and Computation Framework for Linux”, 2022.
 - Gregory Cusack, CU-Boulder, “Enabling Application-Specific Programmable Compute Infrastructure”, 2022.
 - Sepideh Goodarzy, CU-Boulder, “SmartOS: Automating Allocation of Operating System Resources to User Preferences via Reinforcement Learning”, 2022.
 - Insoo Lee, CU-Boulder, “Toward Enhancing Rate Adaptation Behaviors in Video Conferencing using Reinforcement Learning”, 2022.

- Azzam Alsudais, CU-Boulder, “Efficient Approaches for Homing Complex Network Services”, 2020.
- Rahil Gandotra, CU-Boulder, “Energy-Efficient Network Operations”, 2020.
- Parisa Rahimzadeh, CU-Boulder, “Network-Aware Resource Provisioning for Heterogeneous Applications”, 2020.
- Dewang Gedia, CU-Boulder, “Decision-Tree Placement Algorithm for Containerized Network Functions”, 2020.
- Oliver Michel, CU-Boulder, “Cloud-Scale Packet-Level Telemetry and Analytics”, 2019.
- Blake Caldwell, CU-Boulder, “FluidMem: Open Source Full Memory Disaggregation”, 2019.
- Rahat Ibn Rafiq, CU-Boulder, “Scalable and Timely Detection of Cyberbullying in Online Social Networks”, 2018.
- Junaid Khalid, UW-Madison, “Paving the Way for NFV”, 2018.
- Chungkuk Yoo, KAIST, “Mobile-crowd Service for In-situ Instant Collective Visualization of a Massively Packed Crowd”, 2018.
- Keqiang He, UW-Madison, “Improving Datacenter Network Performance via Intelligent Network Edge”, 2017.
- Undergraduate Thesis
 - Alexey Yermakov, CU-Boulder, “Improving Existing Bayesian Optimization Software by Incorporating Gradient Information”, 2023 (Chair).
 - Ria Thakkar, CU-Boulder, “Pairing in Camera-based Wi-Fi Localization Systems”, 2022 (Chair).
 - Elsa Velazquez, CU-Boulder, “The Case for Post Quantum Cryptography on Blockchain Technology”, 2019.
- Senior Capstone
 - Derek Richards, Dustin Martin, Samuel Flanagan, Shelby Unger, Texas A&M, “IBM Senior Assistant”, 2018, *Capstone Best Project Award*.

FUNDING

- Amazon AWS Cloud Credit for Research (\$21,508).
- Sole PI. National Science Foundation. PAWR Supplemental funding, 2020 (\$47,239).
- Equipment gift from Cisco Meraki, 2019 (\$21,487).
- Amazon AWS course credits, 2018 (\$8,300), 2020 (\$1,500).
- Google Cloud course credits, 2018 (\$5,400).
- Sole PI. National Science Foundation. Project Title: CNS Core: Small: Sensor-based Wireless Network Management via Edge Computing. Oct 1, 2019 to Sept 30, 2022 (\$300,000).

TECHNICAL SKILLS

- Languages: C, C++, Java, Perl, Python, bash, sed, awk, L^AT_EX, Matlab, HTML.
- Expertise: datacenter networking, cloud computing, virtualization, Linux kernel development, containers, data analytics, software-defined networking, wireless networking, network routing, network monitoring, network management, load balancing, serverless computing, operating systems, applied machine learning, applied deep learning.

CITIZENSHIP

United States of America.