

Aaron Gember-Jacobson
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CONTACT INFORMATION

Department of Computer Science, Colgate University
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EDUCATION

Ph.D. in Computer Science May 2016
University of Wisconsin–Madison, Madison, WI

Master of Science in Computer Science May 2011
University of Wisconsin–Madison, Madison, WI

Bachelor of Science in Computer Science May 2009
Marquette University, Milwaukee, WI

PROFESSIONAL EXPERIENCE

Assistant Professor, Colgate University July 2016 – Present

Lecturer, University of Wisconsin–Madison Spring 2015, Spring 2014

Research Assistant/Fellow, University of Wisconsin–Madison January 2010 – May 2016

Student Intern, AT&T Research May 2011 – July 2011

HONORS AND AWARDS

- Internet Engineering Task Force (IETF) Applied Networking Research Prize (2015)
- Department of Computer Sciences Graduate Student Instructor Award (2014)
- IBM Ph.D. Fellowship (2013-2015)
- Wisconsin Alumni Research Foundation (WARF) Innovation Award Finalist (2012)
- National Science Foundation Graduate Research Fellowship Honorable Mention (2011)
- University of Wisconsin—Madison, Computer Science Summer Graduate Fellowship (2010)
- Third Place in the ACM Student Research Competition at SIGCSE 2009

TEACHING

COLGATE UNIVERSITY

- **Operating Systems (COSC 301)**: Spring 2017, Fall 2016
- **Computer Networks (COSC 465)**: Spring 2017

UNIVERSITY OF WISCONSIN-MADISON

- **Introduction to Networks (CS 640)**: Spring 2015, Spring 2014
- **Software-Defined Networking Bootcamp**: Spring 2013, Fall 2012

GRANTS

AitF: Collaborative Research: Foundations of Intent-based Networking. National Science Foundation (NSF), 2016-2018, \$60K.

CONFERENCE AND WORKSHOP PAPERS

1. [Aaron Gember-Jacobson](#), Raajay Viswanathan, Aditya Akella, and Ratul Mahajan. “Fast Control Plane Analysis Using an Abstract Representation.” *SIGCOMM*, Florianópolis, Brazil, 2016.
2. Junaid Kahlid, Mark Coatsworth, [Aaron Gember-Jacobson](#), and Aditya Akella. “A Standardized Southbound API for VNF Management.” *Workshop on Hot Topics in Middleboxes and Network Function Virtualization (HotMiddlebox)*, Florianópolis, Brazil, 2016.
3. Junaid Kahlid, [Aaron Gember-Jacobson](#), Roney Michael, Anubhavnidhi Abhashkumar, and Aditya Akella. “Paving the Way for NFV: Simplifying Middlebox Modifications using StateAlyzr.” *Networked Systems Design and Implementation (NSDI)*, Santa Clara, CA, 2016.
4. [Aaron Gember-Jacobson](#), Wenfei Wu, Xiujun Li, Aditya Akella, and Ratul Mahajan. “Management Plane Analytics.” *Internet Measurement Conference (IMC)*, Tokyo, Japan, 2015.
5. [Aaron Gember-Jacobson](#) and Aditya Akella. “Improving the Safety, Scalability, and Efficiency of Network Function State Transfers.” *Workshop on Hot Topics in Middleboxes and Network Function Virtualization (HotMiddlebox)*, London, United Kingdom, 2015.
6. Keqiang He, Junaid Khalid, [Aaron Gember-Jacobson](#), Sourav Das, Chaithan Prakash, Aditya Akella, Li Erran Li, and Marina Thottan. “Measuring Control Plane Latency in SDN-enabled Switches.” *Symposium on SDN Research (SOSR)*, Santa Clara, CA, 2015.
7. Ashok Anand, [Aaron Gember-Jacobson](#), Collin Engstrom, and Aditya Akella. “Design Patterns for Tunable and Efficient SSD-based Indexes.” *Symposium on Architectures for Networking and Communication Systems (ANCS)*, Los Angeles, CA, 2014.
8. [Aaron Gember-Jacobson](#), Raajay Viswanathan, Chaithan Prakash, Robert Grandl, Junaid Khalid, Sourav Das, and Aditya Akella. “OpenNF: Enabling Innovation in Network Function Control.” *SIGCOMM*, Chicago, IL, 2014.
9. Anand Krishnamurthy, Shoban P. Chandrabose, and [Aaron Gember-Jacobson](#). “Pratyaaatha: An Efficient Elastic Distributed SDN Control Plane.” *Workshop on Hot Topics in Software Defined Networking (HotSDN)*, Chicago, IL, 2014.
10. Thomas Ball, Nikolaj Bjorner, [Aaron Gember](#), Shachar Itzhaky, Aleksandr Karbyshev, Mooly Sagiv, Michael Schapira, Asaf Valadarsky. “VeriCon: Towards Verifying Controller Programs in Software-Defined Networks.” *Programming Language Design and Implementation (PLDI)*, Edinburgh, United Kingdom, 2014.
11. Keqiang He, Alexis Fisher, Liang Wang, [Aaron Gember](#), Aditya Akella, and Thomas Ristenpart. “Next Stop, the Cloud: Understanding Modern Web Service Deployment in EC2 and Azure.” *Internet Measurement Conference (IMC)*, Barcelona, Spain, 2013.
12. [Aaron Gember](#), Aditya Akella, Jeffrey Pang, Alexander Varshavsky, and Ramon Caceres. “Obtaining Representative Measurements of Cellular Network Performance.” *Internet Measurement Conference (IMC)*, Boston, MA, 2012.
13. [Aaron Gember](#), Prathmesh Prabhu, Zainab Ghadiyali, and Aditya Akella. “Toward Software-Defined Middlebox Networking.” *Hot Topics in Networks (HotNets)*, Redmond, WA, 2012.
14. [Aaron Gember](#), Christopher Dragga, and Aditya Akella. “ECOS: Leveraging Software-Defined Networks to Support Mobile Application Offloading.” *Symposium on Architectures for Networking and Communications Systems (ANCS)*, Austin, TX, 2012.
15. [Aaron Gember](#), Theophilus Benson, and Aditya Akella. “Challenges in Unifying Control of Middlebox Traversals and Functionality.” *Large-Scale Distributed Systems and Middleware (LADIS)*, Madeira, Portugal, 2012.

16. Aaron Gember, Chris Dragga, and Aditya Akella. "ECOS: Practical Mobile Application Offloading for Enterprises." *USENIX Workshop on Hot Topics in Management of Internet, Cloud, and Enterprise Networks and Services (Hot-ICE)*, San Jose, CA, 2012.
17. Shan-Hsiang Shen, Aaron Gember, Ashok Anand, and Aditya Akella. "Refactoring Content Overhearing to Improve Wireless Performance." *MobiCom*, Las Vegas, NV, 2011.
18. Aaron Gember, Ashok Anand, and Aditya Akella. "A Comparative Study of Handheld and Non-Handheld Traffic in Campus WiFi Networks." *Passive and Active Measurements (PAM)*, Atlanta, GA, 2011.
19. Ashok Anand, Aaron Gember, Vyas Sekar and Aditya Akella. "Tracking Semantic Relationships for Effective Content Management in Home Networks." *ACM SIGCOMM HomeNets Workshop*, New Delhi, India, 2010.

POSTERS AND TECHNICAL REPORTS

1. Keqiang He, Junaid Khalid, Sourav Das, Aaron Gember-Jacobson, Chaithan Prakash, Aditya Akella, Li Erran Li, and Marina Thottan. "Latency in Software Defined Networks: Measurements and Mitigation Techniques." *SIGMETRICS*, Portland, OR, 2015.
2. Aaron Gember, Robert Grandl, and Junaid Khalid. "Design and Implementation of a Framework for Software-Defined Middlebox Networking." *SIGCOMM*, Hong Kong, 2013.
3. Aaron Gember, Robert Grandl, Junaid Khalid, Shan-Hsiang Shen, and Aditya Akella. "Design and Implementation of a Framework for Software-Defined Middlebox Networking." University of Wisconsin-Madison, Technical Report TR1794, Madison, WI, 2013.
4. Aaron Gember, Anand Krishnamurthy, Saul St. John, Robert Grandl, Xiaoyang Gao, Ashok Anand, Theophilus Benson, Aditya Akella, and Vyas Sekar. "Stratos: A Network-Aware Orchestration Layer for Middleboxes in the Cloud." Technical Report arXiv:1305.0209, 2013.
5. Aaron Gember, Anand Krishnamurthy, and Saul St. John. "Virtual Middleboxes as First-Class Entities in the Cloud." *Open Networking Summit*, Santa Clara, CA, 2013.
6. Aaron Gember, Robert Grandl, Junaid Khalid, and Shan-Hsiang Shen. "Towards Software-Defined Middlebox Networking." *Open Networking Summit*, Santa Clara, CA, 2013.
7. Ashok Anand, Aaron Gember, and Aditya Akella. "Generic Design Patterns for Tunable and High-Performance SSD-based Indexes." University of Wisconsin-Madison, Technical Report TR1778, Madison, WI, 2012.
8. Aaron Gember, Robert Grandl, Ashok Anand, Theophilus Benson, and Aditya Akella. "Stratos: Virtual Middleboxes as First-Class Entities." University of Wisconsin-Madison, Technical Report TR1771, Madison, WI, 2012.
9. Aaron Gember and Aditya Akella. "Enterprise Centric Offloading System." *GENI Engineering Conference*, Kansas City, MO, 2011.
10. Aaron Gember and Aditya Akella. "Secure Opportunistic Mobile Application Offload for Enterprise Networks." *GENI Engineering Conference*, San Juan, Puerto Rico, 2011.
11. Aaron Gember, Ashok Anand, and Aditya Akella. "Handheld vs. Non-Handheld Traffic: Implications for Campus WiFi Networks." University of Wisconsin-Madison, TR1679, 2010.
12. Aaron Gember and Aditya Akella. "SONOMA: Secure Opportunistic Network-Wide Offload for Mobile Applications." *GENI Engineering Conference*, Washington, DC, 2010.
13. Aaron Gember and Aditya Akella. "Mobile Device Offloading Using Enterprise Network and Cloud Resources." *GENI Engineering Conference*, San Diego, CA, 2010.

14. Aaron Gember and Dennis Brylow. “Real-Time TCP for Embedded Devices.” *ACM Student Research Competition Poster Session, ACM SIGCSE*, Chattanooga, TN, 2009.

PATENTS

1. Aaron Gember-Jacobson, Chaithan Prakash, Raajay Viswanathan, Robert Grandl, Junaid Kahlid, Sourav Das, and Aditya Akella. “Cloud Architecture with State-Saving Middlebox Scaling.” US Patent # 9,705,785. Issued July 11, 2017.
2. Ashok Anand, Aaron Gember, and Aditya Akella. “High-Performance Indexing for Data-Intensive Systems.” US Patent # 9,612,955. Issued April 4, 2017.
3. Aaron Gember, Robert Grandl, Theophilus Benson, Ashok Anand, and Aditya Akella. “Cloud-Based Middlebox Management System.” US Patent # 9,104,492. Issued August 11, 2105.

SERVICE

RESEARCH COMMUNITY

- *Program Committee Member*, Asia-Pacific Workshop on Networking (APNet): 2017
- *Program Committee Member*, International Symposium on Local and Metropolitan Area Networks (LANMAN): 2017
- *Reviewer*, ACM New York Celebration of Women in Computing (NYCWIC): 2017
- *Reviewer*, IEEE/ACM Transactions on Networking (TON): 2016, 2014
- *External Reviewer*, International Journal of Network Measurement (IJNM): 2016, 2014
- *External Reviewer*, Symposium on Principles of Programming Languages (POPL): 2016
- *External Reviewer*, Computer Communications Review (CCR): 2016, 2015
- *External Reviewer*, IEEE Transactions on Wireless Communications (TWC): 2015
- *Poster Selection Committee Member*, ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS): 2014

OUTREACH

- *Volunteer*, Wisconsin Science Festival (2013)
- *Presenter*, Computer Science for High School (CS4HS) Workshop, Marquette University (2012)
- *President*, ACM student chapter, University of Wisconsin–Madison (2012 – 2014)
- *Vice President*, ACM student chapter, University of Wisconsin–Madison (2011 – 2012)