

Oliver Michel

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Education

University of Colorado Boulder, Boulder, CO, USA Aug. 2015 – May 2019
Ph.D., Computer Science
Thesis: Cloud-Scale Packet-Level Network Telemetry and Analytics
Advisor: Prof. Eric Keller

University of Colorado Boulder, Boulder, CO, USA Aug. 2013 – May 2015
M.S., Computer Science

University of Vienna, Vienna, Austria Feb. 2009 – Jun. 2013
B.S., Computer Science

Experience

Princeton University, Princeton, NJ, USA since Sep. 2023
Associate Research Scholar
Advisor: Prof. Jennifer Rexford

Princeton University, Princeton, NJ, USA Sep. 2021 – Aug. 2023
Postdoctoral Research Associate
Advisor: Prof. Jennifer Rexford

University of Vienna, Vienna, Austria Apr. 2020 – Jul. 2021
Postdoctoral Research Associate
Advisor: Prof. Stefan Schmid

TourRadar GmbH, Vienna, Austria Aug. 2019 – Feb. 2020
Software Engineer

Juniper Networks, OpenLab, Bridgewater, NJ, USA Summer 2016
WAN Automation Software Engineering Intern

University of Illinois at Urbana-Champaign, Urbana, IL, USA Winter 2011 & Summer 2012
Research Intern, Dept. of Computer Science
Advisor: Prof. Brighten Godfrey

Publications

Bibliometrics: 17 peer-reviewed publications, 773 citations, 602 since 2018, h-index: 11, i10-index: 12

Under submission

- [1] [Oliver Michel](#), Satadal Sengupta, Hyojoon Kim, Ravi Netravali, Jennifer Rexford. Rearchitecting Video-Conferencing Systems using SDN Principles. *In submission*.
- [2] Marcelo Abranches, [Oliver Michel](#), Eric Keller. LinuxFP: Transparently Accelerating Linux Networking. *In submission*.

Conferences

- [3] [Oliver Michel](#), Satadal Sengupta, Hyojoon Kim, Ravi Netravali, Jennifer Rexford. Enabling Passive Measurement of Zoom Performance in Production Networks. ACM Internet Measurement Conference (IMC), Nice, France, 2022
- [4] Vamsi Addanki, [Oliver Michel](#), Stefan Schmid. PowerTCP: Pushing the Performance Limits of Datacenter Networks USENIX Symposium on Networked System Design and Implementation (NSDI), Renton, WA, USA, 2022
- [5] Marcelo Abranches, [Oliver Michel](#), Eric Keller, Stefan Schmid. Efficient Network Monitoring Applications in the Kernel with eBPF and XDP. IEEE Conference on Network Function Virtualization and Software-Defined Networking (NFV-SDN), Heraklion, Greece, 2021 — **Won Best-Paper Award**
- [6] [Oliver Michel](#), Eric Keller, Fernando M.V. Ramos. Network Defragmentation in Virtualized Data Centers. 6th IEEE International Conference on Software Defined Systems (SDS), Rome, Italy, 2019
- [7] John Sonchack, [Oliver Michel](#), Adam J. Aviv, Eric Keller, Jonathan M. Smith. Scaling Hardware Accelerated Monitoring to Concurrent and Dynamic Queries With *Flow. USENIX Annual Technical Conference (ATC), Boston, MA, USA, 2018
- [8] [Oliver Michel](#), Eric Keller. SDN in Wide-Area Networks: A Survey. 4th IEEE International Conference on Software Defined Systems (SDS), Valencia, Spain, 2017
- [9] [Oliver Michel](#), Eric Keller. Policy Routing using Process-Level Identifiers. 3rd IEEE Intl. Symposium on Software Defined Systems (SDS), Berlin, Germany, 2016

Workshops

- [10] Marcelo Abranches, [Oliver Michel](#), Eric Keller. Getting back what was lost in the Era of High-Speed Software Packet Processing. ACM Workshop on Hot Topics in Networks (HotNets), Austin, TX, USA, 2022
- [11] [Oliver Michel](#), John Sonchack, Eric Keller, Jonathan M. Smith. PIQ: Persistent Interactive Queries for Network Analytics. ACM International Workshop on Security in Software Defined Networks & Network Function Virtualization (SDN-NFV Sec.), Dallas, TX, USA, 2019
- [12] [Oliver Michel](#), John Sonchack, Eric Keller, Jonathan M. Smith. Packet-Level Analytics in Software without Compromises. 10th USENIX Workshop on Hot Topics in Cloud Computing (HotCloud), Boston, MA, USA, 2018
- [13] Greg Cusack, [Oliver Michel](#), Eric Keller. Machine Learning-Based Detection of Ransomware using SDN. ACM International Workshop on Security in Software Defined Networks & Network Function Virtualization (SDN-NFV Sec.), Tempe, AZ, USA, 2018
- [14] Matthew Monaco, [Oliver Michel](#), Eric Keller. Applying Operating System Principles to SDN Controller Design. 12th ACM Workshop on Hot Topics in Networks (HotNets), College Park, MD, USA, 2013
- [15] Ashish Vulimiri, [Oliver Michel](#), P. Brighten Godfrey, Scott Shenker. More is Less: Reducing Latency via Redundancy. ACM Workshop on Hot Topics in Networks (HotNets), Redmond, WA, USA, 2012

Journals

- [16] [Oliver Michel](#), Roberto Bifulco, Gábor Rétvári, Stefan Schmid. The Programmable Data Plane: Abstractions, Architectures, Algorithms, and Applications. ACM Computing Surveys (CSUR), Vol. 54, Issue 4, July 2021
- [17] [Oliver Michel](#), John Sonchack, Greg Cusack, Maziyar Nazari, Eric Keller, Jonathan M. Smith. Software Packet-Level Network Analytics at Cloud Scale. IEEE Transactions on Network and Service Management (TNSM), Vol. 18, Issue 1, Mar. 2021

Talks

Enabling Passive Measurement of Zoom Performance in Production Networks

- Columbia University, New York, Feb. 2023
- North American Network Operators Group (NANOG) General Meeting 87, Atlanta, GA, Feb. 2023
- University of Chicago, Oct. 2022

Cloud-Scale Packet-Level Network Telemetry and Analytics

- University of Vienna, April 2019
- North American Network Operators Group (NANOG) General Meeting 73, Denver, CO, June 2018

Network Defragmentation in Virtualized Data Centers

- University of Lisbon, September 2017

Applying Operating System Principles to SDN Controller Design

- University of Illinois at Urbana-Champaign, April 2014

More is Less: Reducing Latency via Redundancy

- University of Colorado Boulder, April 2013

Posters

- [1] [Oliver Michel](#), Satadal Sengupta, Hyojoon Kim, Ravi Netravali, Jennifer Rexford. Passive Measurement of Real-Time Video Applications. Project Pronto Demo Day, Stanford, CA, USA, 2023
- [2] [Oliver Michel](#), John Sonchack, Adam J. Aviv, Eric Keller. Scalable, Hardware-Accelerated Network Analytics. 15th USENIX Symposium on Networked System Design and Implementation (NSDI), Renton, WA, USA, 2018
- [3] Greg Cusack, [Oliver Michel](#), Eric Keller. Machine Learning-Based Fingerprinting of Network Traffic using Programmable Forwarding Engines. NDSS Security Symposium 2018, San Diego, CA, USA, 2018 — **Won Best-Poster Award**
- [4] [Oliver Michel](#), Eric Keller. Defragmenting the Cloud. 13th USENIX Symposium on Networked System Design and Implementation (NSDI), Santa Clara, CA, USA, 2016
- [5] [Oliver Michel](#), Michael Coughlin, Eric Keller. Extending the Software-Defined Network Boundary. ACM SIGCOMM 2014 Conference, Chicago, IL, USA, 2014
- [6] Michael Coughlin, [Oliver Michel](#), Eric Keller. Making the Live Network the Honeypot. 11th USENIX Symposium on Networked System Design and Implementation (NSDI), Seattle, WA, USA, 2014
- [7] [Oliver Michel](#), Matthew Monaco, Eric Keller. Applying Operating System Principles to SDN Controller Design. 18th GENI Engineering Conference, New York, NY, USA, 2013
- [8] [Oliver Michel](#), David Stezenbach, Kurt Tutschku. Multihoming and Adaptive Multipath Transmission using off-the-shelf Components in Preclinical Medical Care. 10th USENIX Symposium on Networked System Design and Implementation (NSDI), Chicago, IL, USA, 2013
- [9] [Oliver Michel](#), Ashish Vulimiri, P. Brighten Godfrey. Adaptive Source Routing. 12th GENI Engineering Conference, Los Angeles, CA, USA, 2012

Teaching Experience

Guest Lecturer, ECE539B Security and Performance Challenges in Networked Systems

Princeton University, Prof. Maria Apostolaki, Fall 2022

Lecturer, Network Security (Undergraduate and Graduate)

University of Vienna, Spring 2021

Lecturer, Operating Systems (Undergraduate)

University of Vienna, Spring 2021

Lecturer, Network Technologies (Undergraduate)
University of Vienna, Fall 2020

Guest Lecturer, ECEN5008 Advanced Computer and Networked System Security
University of Colorado Boulder, Prof. Eric Keller, Fall 2017

Guest Lecturer, ECEN5013, Advanced Computer Networks
University of Colorado Boulder, Prof. Eric Keller, Fall 2013, Fall 2015, Fall 2016

Teaching Assistant, CSCI2400 Computer Systems
University of Colorado Boulder, Prof. Richard Han, Fall 2013

Staff Tutor, Network Technologies
University of Vienna, Spring 2011, Prof. Kurt Tutschku, Spring 2012

Awards and Fellowships

- Best Paper Award, IEEE NFV-SDN 2021
- Best Technical Poster Award, NDSS 2018
- Dean's Outstanding Merit Fellowship, University of Colorado Boulder, 2013
- Joint Study Scholarship, University of Vienna, Austria, 2011

Service

Program Committee

- IEEE Conference on Local Computer Networks (LCN), 2023
- ACM SIGCOMM Posters & Demos, 2022
- ACM/IEEE Symp. on Architectures for Networking and Communication Systems (ANCS), 2021
- ACM Workshop on Systems and Network Telemetry and Applications (SNTA), 2021, 2022
- IEEE Conference on Network Function Virtualization and Software-defined Networks (NFV-SDN), 2021, 2022

Reviewer

- Elsevier Computer Networks Journal, 2022
- IEEE Internet of Things Journal, 2022, 2023
- IEEE/ACM Transactions on Networking (TON), 2021, 2023
- IEEE Transactions on Network and Service Management (TNSM), 2019, 2020, 2021

Organization Committee

- IEEE Conference on Network Function Virtualization and Software-defined Networks (NFV-SDN), 2021

External Reviewer

- USENIX Symposium on Networked System Design and Implementation (NSDI), 2023
- IEEE Conference on Computer Communications (INFOCOM), 2021

References

Jennifer Rexford

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Eric Keller

Associate Professor, University of Colorado Boulder
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Kyle Jamieson

Professor, Princeton University
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Stefan Schmid

Professor, Technical University of Berlin
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Ravi Netravali

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