
CONTACT INFORMATION	Chair of Connected Mobility, I11 Department of Informatics Technische Universität München Boltzmannstraße 3 85748 Garching bei München, Germany ✉ bajpaiv@in.tum.de 🌐 www.vaibhavbajpai.com	
RESEARCH INTERESTS	Internet Measurements, Network Management, Reproducibility	
AWARDS	IEEE ComSoc Award for the Best Dissertation in Network and Service Management	2017
EDUCATION	Jacobs University Bremen , Germany – Doctor of Philosophy, Computer Science – Master of Science, Computer Science Uttar Pradesh Technical University , India – Bachelor of Technology, Computer Science and Engineering	2012 – 2016 2010 – 2012 2005 – 2009
EXPERIENCE	Technische Universität München , Germany (– advised by Jörg Ott) – Postdoctoral Fellow Jacobs University Bremen , Germany (– advised by Jürgen Schönwälder) – Postdoctoral Fellow – Research Associate – Student & Teaching Assistant Infosys Technologies Ltd , Bangalore, India – Systems Engineer	2017 – 2016 – 2016 2012 – 2016 2011 – 2014 2009 – 2010
RESEARCH VISTS	CAIDA , USA (– hosted by kc claffy) – Duration: 1 Week	08/2017
PROJECTS	SSICLOPS – Scalable & Secure Infrastructures for Cloud Operations – Contributions to WP1 and WP5 FLAMINGO – Management of the Future Internet – Responsible for WP1 – Contributions to WP2, WP3, WP4, and WP5 LEONE – From Global Measurements to Local Management – Contributions to WP1, WP2, WP3 and WP4	2017 – 2018 2015 – 2016 2012 – 2015
TEACHING	Lecturer – TU Munich – Internet Measurements Seminar – Future Internet Protocols: Design Principles and Deployment Guest Lecturer – TU Munich – Protocol Design – Connected Mobility Basics – Networked Multimedia Systems Guest Lecturer – Jacobs University Bremen	2017, 2018 2017 2018 2018 2017

- Operating Systems 2013, 2014
- Computer Networks 2013, 2014
- Advanced Computer Networks 2012, 2014

Teaching Assistant – Jacobs University Bremen

responsibilities involved preparing and grading assignments

- Internet Measurement and Management Lab 2014
- Computer Networks 2011, 2013, 2014
- Software Engineering Lab 2012
- Algorithms and Data Structures 2011

MENTORING

Doctoral Students (– supervised by Jörg Ott)

- Trinh Viet Doan. *Decentralised Internet* 2018–
- Alemnew Sheferaw Asrese. *Measuring Web Latency and Rendering Performance* 2017–
- Stefan Neumeier. *Teleoperated Driving by Using a Predictive Virtual Model Based Approach* 2017–
- Ermias Walelgne. *Measuring Performance and Stability in Cellular Networks* 2017–

Master Students

- Sergey Podanev. *Measuring YouTube Content Delivery over Google QUIC* 2018
- Abhishek Kapoor. *Measuring NetFlix Performance over IPv6* 2018
- Trinh Viet Doan. *Quantifying Latency and Path Lengths of Content Caches* 2017
- Steffie Jacob Eravuchira. *Measuring Webpage Similarity from Dual-Stacked Hosts* 2015
- Corneliu-Claudiu Prodescu. *IPFIX support for NFQL* 2013

Bachelor Students

- Bernhard Jaeger. *Measuring Google QUIC Connect Times* 2018
- Stefan Su. *Correlating YouTube QoE with Content Delivery Paths* 2018
- Martin Kunzmann. *Analysing the Impact of CDNs on IPv6 performance* 2018
- Muhammed Sahin. *Analysing the Impact of CDNs on IPv6 penetration* 2018
- Ozan Kaya. *Comparison of IPv4 and IPv6 Geolocation Accuracy* 2017
- Otar Bichiashvil. *Large-scale TCP throughput performance measurement over IPv4 and IPv6* 2015
- Vlad Victor Ungureanu. *LMAP Protocol Implementation* 2015
- Durim Morina. *A front-end parser for NFQL* 2013
- Mjellma Berisha. *NETCONF over TLS implementation* 2013

PC SERVICE

Technical Program Committee:

- ACM SIGCOMM Workshop on Big Data Analytics and Machine Learning (Big-DAMA) 2018
- IFIP Traffic Measurement and Analysis Conference (TMA) 2018
- IFIP Networking 2017, 2018
- IEEE/IFIP Network Operations and Management Symposium (NOMS) 2018
- ACM CoNEXT Student Workshop 2017
- IFIP/IEEE International Symposium on Integrated Network Management (IM) 2017

Shadow Technical Program Committee:

- Conference on Network and Service Management (CNSM) 2016
- Conference on emerging Networking EXperiments and Technologies (CoNEXT) 2015

External Reviewer:

- ACM SIGCOMM Computer Communication Review (CCR) 2016, 2018
- IEEE Communications Magazine (Network & Service Management Series) 2014 – 2018
- IEEE INFOCOM 2018
- Wiley International Journal of Network Management (IJNM) 2016, 2018
- ACM SIGCOMM Computer Communication Review (CCR) Artefacts Review 2017
- IEEE Communications Surveys and Tutorials (COMST) 2017
- IEEE Transactions on Network and Service Management (TNSM) 2016 – 2017
- IEEE Communications Magazine (Network Testing & Analytics Series) 2017
- IEEE Communications Magazine (Feature Topic: Human-Driven Edge Computing) 2017
- ACM Transactions on Multimedia Computing, Communications & Applications (TOMM) 2017

	– ACM Transactions on Internet Technology (TOIT)	2017
	– IFIP Traffic Measurement and Analysis Conference (TMA)	2017
	– ACM Multimedia Conference (ACM-MM)	2017
	– ACM SIGCOMM Workshop on Network & OS Support for Digital Audio & Video (NOSSDAV)	2017
	– IEEE Communications Magazine (Feature Topic: Advances in Networking Software)	2016
	– IEEE Communications Magazine (Standards Supplement Series)	2016
	– Springer Journal of Network and Systems Management (JNSM)	2014, 2016
	– IEEE Communications Letters	2016
	– Wiley International Journal of Network Management (IJNM)	2016
	– IEEE Conference on Network and Service Management (CNSM)	2015
	– IFIP/IEEE International Symposium on Integrated Network Management (IM)	2013, 2015
	– Conference on Autonomous Infrastructure, Management and Security (AIMS)	2013, 2014
	– IFIP Networking Conference	2014
	– IEEE/IFIP Network Operations and Management Symposium (NOMS)	2014
ORGANISER	Dagstuhl Seminar (#18412). <i>Encouraging Reproducibility</i> https://www.dagstuhl.de/18412	Wadern, 10/2018
	TMA Shadow PC. <i>Traffic Measurement and Analysis Conference Shadow PC</i> http://tma.ifip.org/2018/shadow-pc	Vienna, 06/2018
	CM Doctoral Retreat. <i>TU Munich Connected Mobility Doctoral Retreat</i> https://www.cm.in.tum.de/doctorsal-seminar/2018-04	Weihenstephan, 04/2018
	CM Doctoral Retreat. <i>TU Munich Connected Mobility Doctoral Retreat</i> https://www.cm.in.tum.de/doctorsal-seminar/2017-10	Frauenchiemsee, 10/2017
COORDINATOR	MIR. <i>Munich Internet Research Retreat</i> https://www.cm.in.tum.de/mir3/2017-11	Ratenhaslach, 11/2017
	MIR. <i>Munich Internet Research Retreat</i> https://www.cm.in.tum.de/mir3/2017-05	Ratenhaslach, 04/2017
	Dagstuhl Seminar (#16012). <i>Global Measurement Practice and Experience</i> https://www.dagstuhl.de/16012	Wadern, 2016
JOURNAL PUBLICATIONS	<u>Vaibhav Bajpai, Saba Ahsan, Jürgen Schönwälder, Jörg Ott</u> Measuring YouTube Content Delivery over IPv6 ACM Computer Communication Review (CCR), October 2017 [ISI Impact: 3.81] https://doi.org/10.1145/3155055.3155057 <i>coverage by APNIC labs</i> – https://blog.apnic.net/2017/09/27/youtube-faster-ipv6	
	<u>Vaibhav Bajpai, Steffie Jacob Eravuchira, Jürgen Schönwälder</u> Dissecting Last-mile Latency Characteristics ACM Computer Communication Review (CCR), October 2017 [ISI Impact: 3.81] https://doi.org/10.1145/3155055.3155059	
	<u>Vaibhav Bajpai, Jürgen Schönwälder</u> Network Flow Query Language – Design, Implementation, Performance and Applications IEEE Transactions on Network and Service Management (TNSM), March 2017 [ISI Impact: 1.29] http://dx.doi.org/10.1109/TNSM.2016.2633511 .	
	<u>Vaibhav Bajpai, Steffie Jacob Eravuchira, Jürgen Schönwälder</u> Lessons Learned from using the RIPE Atlas Platform for Measurement Research ACM Computer Communication Review (CCR Editorial), July 2015 [ISI Impact: 3.81] http://dx.doi.org/10.1145/2805789.2805796	
	<u>Vaibhav Bajpai, Jürgen Schönwälder</u> A Survey on Internet Performance Measurement Platforms and Related Standardization Efforts. IEEE Communications Surveys & Tutorials (COMST), April 2015: [ISI Impact: 9.22] http://dx.doi.org/10.1109/COMST.2015.2418435	

Ermias Walelgne, Setälä Kim, Vaibhav Bajpai, Stefan Neumeier, Jukka Manner, Jörg Ott
Factors Affecting Web Flows in Cellular Networks.
IFIP Networking Conference, Zürich, May 2018 [[24.4%](#), [55/225 papers](#)]

Ermias Walelgne, Jukka Manner, Vaibhav Bajpai, Jörg Ott
Analyzing Throughput and Stability in Cellular Networks
Network Operations and Management Symposium (NOMS), Apr 2018 [[32.2%](#), [56/174](#)]

Ricky Mok, Vaibhav Bajpai, Amogh Dhamdhere, kc claffy
Revealing the Load Balancing Behavior of YouTube Traffic on Interdomain Links
Passive and Active Measurement Conference (PAM), Mar 2018 [[40%](#), [20/50](#)]
https://doi.org/10.1007/978-3-319-76481-8_17

Vaibhav Bajpai, Jürgen Schönwälder
Understanding the Impact of Network Infrastructure Changes Using Large-Scale Measurement Platforms
Symposium on Integrated Network Management (IM) Dissertation Session, May 2017
<https://doi.org/10.23919/INM.2017.7987382>
[Best Dissertation Digest Award]

Vaibhav Bajpai, Steffie Jacob Eravuchira, Jürgen Schönwälder, Robert Kisteleki, Emile Aben
Vantage Point Selection for IPv6 Measurements: Benefits and Limitations of RIPE Atlas Tags
Symposium on Integrated Network Management (IM), May 2017 [[28.6%](#), [44/154](#)]
<https://doi.org/10.23919/INM.2017.7987262>

Steffie Jacob Eravuchira, Vaibhav Bajpai, Jürgen Schönwälder, Sam Crawford
Measuring Web Similarity from Dual-stacked Hosts
Conference on Network and Service Management (CNSM), October 2016 [[27.6%](#), [32/116](#)]
<https://doi.org/10.1109/CNSM.2016.7818415>

Vaibhav Bajpai, Jürgen Schönwälder
IPv4 versus IPv6 - Who connects faster?
IFIP Networking Conference, May 2015 [[23.2%](#), [47/202](#)]
<http://dx.doi.org/10.1109/IFIPNetworking.2015.7145323>

Saba Ahsan, Vaibhav Bajpai, Jörg Ott, Jürgen Schönwälder
Measuring YouTube from Dual-Stacked Hosts
Passive and Active Measurement Conference (PAM), March 2015 [[27%](#), [27/100](#)].
Workshop on Research and Applications of Internet Measurements (RAIM), October 2015.
http://dx.doi.org/10.1007/978-3-319-15509-8_19

Vaibhav Bajpai, Johannes Schauer, Jürgen Schönwälder
NFQL: A Tool for Querying Network Flow Records,
International Symposium on Integrated Network Management (IM), May 2013
http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=6573045

Vaibhav Bajpai *et al.*
Design and Prototype Implementation of the WhatsApp Telemetry Platform,
International Conference on Internet of Things (iThings), November 2012
<http://dx.doi.org/10.1109/GreenCom.2012.21>

Vaibhav Bajpai, Vladislav Perelman
A Cross-Platform Open Source 3D Object Reconstruction System using a Laser Line Projector
IEEE Germany Student Conference (GSC), November 2012.

Vaibhav Bajpai, *et al.*
Flow-based Identification of Failures Caused by IPv6 Transition Mechanisms
Autonomous Infrastructure, Management & Security (AIMS), June 2012 [[43.5%](#), [10/23](#)]
http://dx.doi.org/10.1007/978-3-642-30633-4_19

A YANG Data Model for LMAP Measurement Agents
IETF RFC 8194, August 2017
<http://dx.doi.org/10.17487/RFC8194>

WORKSHOP
PUBLICATIONS

Vaibhav Bajpai, Mirja Kühlewind, Jörg Ott, Jürgen Schönwälder, Anna Sperotto, Brian Trammell
Challenges with Reproducibility
ACM SIGCOMM 2017 Reproducibility Workshop, August 2017.
<https://doi.org/10.1145/3097766.3097767>

Vaibhav Bajpai, Jürgen Schönwälder
Measuring the Effects of Happy Eyeballs
Applied Networking Research Workshop (ANRW), July 2016. [30%, 9/30]
<http://dx.doi.org/10.1145/2959424.2959429>
coverage by the Register — <https://goo.gl/XGsLtJ>
coverage by APNIC labs — <https://goo.gl/xzJbtQ>

Vaibhav Bajpai, Jürgen Schönwälder
Understanding the Impact of Network Infrastructure Changes using Large-Scale Measurement Platforms
Autonomous Infrastructure, Management & Security (AIMS), June 2013. [50%, 7/14]
http://dx.doi.org/10.1007/978-3-642-38998-6_5

THESIS

Vaibhav Bajpai
Understanding the Impact of Network Infrastructure Changes using Large-Scale Measurement Platforms
PhD Thesis, Jacobs University Bremen, August 2016
<http://nbn-resolving.de/urn:nbn:de:gbv:579-opus-1005861>

Vaibhav Bajpai
Network Flow Query Language
Masters Thesis, Jacobs University Bremen, August 2012
<http://cnds.eecs.jacobs-university.de/archive/msc-2012-vbajpai.pdf>

EVENT REPORTS

Vaibhav Bajpai, Arthur W. Berger, Philip Eardley, Jörg Ott, Jürgen Schönwälder
Global Measurements: Practice and Experience (Report on Dagstuhl Seminar #16012)
ACM Computer Communication Review (CCR), April 2016 [ISI Impact: 3.81]
<http://dx.doi.org/10.1145/2935634.2935641>
Dagstuhl Reports, Volume 6, Issue 1, May 2016
<http://dx.doi.org/10.4230/DagRep.6.1.15>

Vaibhav Bajpai, Jürgen Schönwälder
A Report on the 1st NMRG Workshop on Large Scale Network Measurements
Journal of Network and Systems Management (JNSM), September 2014 [ISI Impact: 1.08]
<http://dx.doi.org/10.1007/s10922-014-9328-2>

POSTERS

Ermias Andargie Walelgne, Jukka Manner, Vaibhav Bajpai, Jörg Ott
Analyzing the Performance and Stability of Cellular Networks
ACM Internet Measurement Conference (IMC) Poster, November 2017

Ping on the Move
Stefan Neumeier, Ermias Walelgne, Vaibhav Bajpai, Jörg Ott, Christian Facchi
ACM Internet Measurement Conference (IMC) Poster, November 2017

Vaibhav Bajpai, Radek Krejčí
Managing SamKnows Probes using NETCONF
IEEE/IFIP Network Operations and Management Symposium (NOMS) Poster, May 2014
<http://dx.doi.org/10.1109/NOMS.2014.6838279>

Vaibhav Bajpai, Jürgen Schönwälder
NETCONF Interoperability Lab
IEEE/IFIP Network Operations and Management Symposium (NOMS) Poster, May 2014

<http://dx.doi.org/10.1109/NOMS.2014.6838278>

Vaibhav Bajpai, Jürgen Schönwälder
Measuring TCP Connection Establishment Times of Dual-Stacked Web Services
Conference on Network and Service Management (CNSM) Poster, October 2013
<http://dx.doi.org/10.1109/CNSM.2013.6727822>

INTERNET DRAFTS

Jürgen Schönwälder, Vaibhav Bajpai
Using RESTCONF with LMAP Measurement Agents
IETF Internet Draft (I-D), June 2017 [**Working Group Document**]
<http://tools.ietf.org/html/draft-ietf-lmap-restconf-04>

Marcelo Bagnulo, Trevor Burbridge, Sam Crawford, Jürgen Schönwälder, Vaibhav Bajpai
Large Measurement Platform Protocol
IETF Internet Draft (I-D), September 2014 [**Expired Document**]
<http://tools.ietf.org/html/draft-bagnulo-lmap-http-03>

Vaibhav Bajpai, Jürgen Schönwälder
Measuring the Effects of Happy Eyeballs
IETF Internet Draft (I-D), July 2013 [**Expired Document**]
<http://tools.ietf.org/html/draft-bajpai-happy-01>

TALKS

Vaibhav Bajpai, Jürgen Schönwälder
A Longitudinal View of Dual-stacked Websites – Failures, Latency and Happy Eyeballs
IETF 99 IPv6 Operations Working Group, Prague, Jul 2017
Also presented at Orange R&D, Nov 2017 and CAIDA, San Diego, Aug 2017,
<https://goo.gl/Xd42wf>

Vaibhav Bajpai, Saba Ahsan, Jörg Ott, Jürgen Schönwälder
Measuring YouTube Content Delivery over IPv6
IETF 99 Measurements and Analysis for Protocols Working Group, Prague, Jul 2017
Also presented at Orange R&D, Nov 2017 and CAIDA, San Diego, Aug 2017,
<https://goo.gl/YbyqoD>

Vaibhav Bajpai
Measuring IPv6 Performance
Munich Internet Research Retreat, Raitenhaslach, Nov 2016
<http://vaibhavbajpai.com/documents/talks/v6-mir-raitenhaslach-slides.pdf>

Vaibhav Bajpai
Understanding the Impact of Network Infrastructure Changes using
Large-scale Measurement Platforms.
TU Munich Doctoral Seminar, Raitenhaslach, Oct 2016
<http://vaibhavbajpai.com/documents/talks/tum-raitenhaslach-slides.pdf>

Vaibhav Bajpai, Jürgen Schönwälder
Measuring the Effects of Happy Eyeballs
RIPE 73 IPv6 Working Group, Madrid, Oct 2016
<https://ripe73.ripe.net/archives/video/1467>

Vaibhav Bajpai, Steffie Jacob Eravuchira, Jürgen Schönwälder, Sam Crawford
Measuring Webpage Similarity from Dual-Stacked Hosts
RIPE 72 Plenary, Copenhagen, May 2016
<https://ripe72.ripe.net/archives/video/126>

Vaibhav Bajpai, Steffie Jacob Eravuchira, Jürgen Schönwälder, Robert Kisteleki, Emile Aben
Vantage Point Selection for IPv6 Measurements: Benefits and Limitations of RIPE Atlas Tags
MAT Working Group Meeting at RIPE 72, Copenhagen, May 2016
<https://ripe72.ripe.net/archives/video/167>

Vaibhav Bajpai
Measuring IPv6 Performance
DE-CIX, Frankfurt, April 2016.
<http://vaibhavbajpai.com/documents/talks/v6-performance-decix-2016.pdf>

Marcelo Bagnulo, Trevor Burbridge, Sam Crawford, Jürgen Schönwälder, Vaibhav Bajpai
Large Measurement Platform Protocol
LMAP Working Group Meeting at IETF 91, Honolulu, November 2014.
<http://www.ietf.org/proceedings/91/slides/slides-91-lmap-8.pdf>

Steffie Jacob Eravuchira, Vaibhav Bajpai, Jürgen Schönwälder
Measurement Research within the Python3 Ecosystem
MAT Working Group Meeting at RIPE 69, London, November 2014
<https://ripe69.ripe.net/archives/video/10125>

Vaibhav Bajpai, Steffie Jacob Eravuchira, Jürgen Schönwälder
Lessons Learned From Using the RIPE Atlas Platform for Measurement Research
MAT Working Group Meeting at RIPE 68, Warsaw, May 2014.
<https://ripe68.ripe.net/archives/video/240>

Vaibhav Bajpai, Jürgen Schönwälder
Measuring TCP Connection Establishment Times of Dual-Stacked Web Services
IRTF NMRG Workshop on Large-Scale Network Measurements at CNSM 2013, Zürich, October 2013.
<http://goo.gl/3ACsAA>

Vaibhav Bajpai, Johannes Schauer, Corneliu Claudiu Prodescu, Jürgen Schönwälder
NFQL: A Tool for Querying Network Flow Records
IRTF NMRG Workshop on NetFlow/IPFIX at IETF 87, Berlin, July 2013
<http://www.ietf.org/proceedings/87/slides/slides-87-nmr-0.pdf>

Vaibhav Bajpai, Jürgen Schönwälder
Measuring the Effects of Happy Eyeballs
v6ops Working Group Meeting at IETF 87, Berlin, July 2013
<http://www.ietf.org/proceedings/87/slides/slides-87-v6ops-8.pdf>

Vaibhav Bajpai, Jürgen Schönwälder
Measuring the Effectiveness of Happy Eyeballs
IPv6 Working Group Meeting at RIPE 66, Dublin, May 2013.
<https://ripe66.ripe.net/archives/video/1208>
coverage by RIPE Labs — <https://goo.gl/1mERyV>

TUTORIALS

Vaibhav Bajpai, Nikolay Melnikov
Large-Scale Measurement Platforms
Autonomous Infrastructure, Management & Security (AIMS), Barcelona, June 2013.
<http://cnds.eecs.jacobs-university.de/tutorials>

INVITED SEMINARS

— MIR. *Munich Internet Research Retreat*
— CM Doctoral Retreat. *TU Munich Connected Mobility Doctoral Retreat*
— Leone/IETF/BBF Workshop. *Large-scale Measurements*
— Dagstuhl Seminar (#13472). *Global Measurement Framework*

Ratenhaslach, 2016
Ratenhaslach, 2016
Dublin, 2014
Wadern, 2013

OPEN SOURCE CONTRIBUTIONS

— [youtube](#), A tool to measure youtube performance delivered over IPv4 and IPv6
— [simweb](#), A tool to measure similarity of webpages delivered over IPv4 and IPv6
— [nfql](#), A C implementation of the network flow query language
— [happy](#), A happy eyeballs [RFC 6555] probing tool
— [ncclient](#), A Python library for NETCONF clients
— [libnetconf](#), A NETCONF library in C intended for building NETCONF clients and servers.
— [scamper](#), A scalable and extensible packet prober for active measurement of the Internet

- [mtr](#), *A network diagnostic tool*
- [homebrew-versions](#), *Versioned formulae for the Homebrew package manager*

HONORS	– RIPE RACI fellowship to attend RIPE 66	2013
	– Graduated with a 1.0 grade on the masters thesis, 1.64 overall GPA in masters	2012
	– Graduated as a top student of the class (80.84%) in bachelors	2009
	– Ranked 9 th amongst bachelor freshmen from 600 colleges affiliated with university	2005
	– Graduated as a top student of the class (3 rd in city) in XII (93.4%)	2005
	– Merit certificate for 100% marks in Computer Science in XII	2005
	– Graduated as a top student of the class in X (86.0%)	2003
	– Merit certificate for 100% marks in Science in X (felicitated by the State Govt)	2003
– All-India merit position 35 th in Junior Mathematics Olympiad	2002	

MEMBERSHIPS	– IEEE Membership
	– IEEE Communications Society Membership
	– Internet Society Membership
	– SIGCOMM Membership
	– IFIP TC6 Working Group 6.6 Membership

LANGUAGES	– English	fluent
	– Hindi	native
	– German	A1 level

REFERENCES	Jürgen Schönwälder Jacobs University Bremen, DE j.schoenwaelder@jacobs-university.de	Jörg Ott Technische Universität München, DE ott@in.tum.de
	Philip Eardley BT Research, UK philip.eardley@bt.com	Sam Crawford SamKnows Limited, UK sam@samknows.com
	Filip De Turck Ghent University, BE filip.deturck@ugent.be	