

# Vaibhav Bajpai

CONTACT INFORMATION	Computer Networks and Distributed Systems Jacobs University Bremen	v.bajpai@jacobs-university.de <a href="http://www.vaibhavbajpai.com">http://www.vaibhavbajpai.com</a>
EDUCATION	<p><b>Jacobs University Bremen</b>, Germany Doctor of Philosophy, Computer Science</p> <p>Sep 2012—Present</p> <ul style="list-style-type: none"> <li>— <i>Dissertation title: Understanding the Impact of Network Infrastructure Changes using Large-Scale Measurement Platforms</i></li> <li>— <i>Dissertation work under the guidance of Prof. Dr. Jürgen Schönwälder</i></li> </ul> <p><b>Jacobs University Bremen</b>, Germany Master of Science, Computer Science</p> <p>Sep 2010—Aug 2012</p> <ul style="list-style-type: none"> <li>— <i>Masters Thesis: A complete system integration of the network flow query language, under the guidance of Prof. Dr. Jürgen Schönwälder</i></li> <li>— <i>Graduated with a 1.0 grade on the masters thesis, 1.64 overall GPA</i></li> <li>— <i>Merit-based tuition scholarship and stipend for the entire duration</i></li> </ul>	
PROFESSIONAL EXPERIENCE	<p><b>Jacobs University Bremen</b>, Germany Research Associate</p> <p>Dec 2012—Present</p> <ul style="list-style-type: none"> <li>— <i>Leone FP7 EU Project: From Global Measurements to Local Management</i></li> <li>— <i>Flamingo FP7 EU Project: Management of the Future Internet</i></li> </ul> <p><b>Jacobs University Bremen</b>, Germany Student &amp; Teaching Assistant</p> <p>Feb 2011— Present</p> <ul style="list-style-type: none"> <li>— <i>Computer Networks</i>, Fall 2014</li> <li>— <i>Internet Measurement and Management Lab</i>, Spring 2014</li> <li>— <i>Computer Networks</i>, Fall 2013</li> <li>— <i>Implementation of the Network Flow Query Language (NFQL)</i>, Summer 2012</li> <li>— <i>Software Engineering Lab</i>, Spring 2012</li> <li>— <i>Networks and Protocols &amp; Algorithms and Data Structures</i>, Fall 2011</li> <li>— <i>Machine Vision Project</i>, Spring 2011</li> </ul>	
PUBLICATIONS	<p>Saba Ahsan, Vaibhav Bajpai, Jörg Ott, Jürgen Schönwälder: Measuring YouTube from Dual-Stacked Hosts, <i>Passive and Active Measurement Conference (PAM 2015)</i>, March 2015 (to appear).</p> <p>Vaibhav Bajpai, Jürgen Schönwälder: A Report on the 1st NMRG Workshop on Large Scale Network Measurements, <i>Journal of Network and Systems Management (JNSM 2014)</i>, September 2014. <a href="http://dx.doi.org/10.1007/s10922-014-9328-2">http://dx.doi.org/10.1007/s10922-014-9328-2</a></p> <p>Vaibhav Bajpai, Radek Krejčí: Managing SamKnows Probes using NETCONF, <i>14th IEEE/IFIP Network Operations and Management Symposium (NOMS 2014)</i>, Krakow, May 2014. <a href="http://dx.doi.org/10.1109/NOMS.2014.6838279">http://dx.doi.org/10.1109/NOMS.2014.6838279</a></p> <p>Vaibhav Bajpai, Jürgen Schönwälder: NETCONF Interoperability Lab, <i>14th IEEE/IFIP Network Operations and Management Symposium (NOMS 2014)</i>, Krakow, May 2014. <a href="http://dx.doi.org/10.1109/NOMS.2014.6838278">http://dx.doi.org/10.1109/NOMS.2014.6838278</a></p> <p>Vaibhav Bajpai, Jürgen Schönwälder: Measuring TCP Connection Establishment Times of Dual-Stacked Web Services, <i>9th International Conference on Network and Service Management (CNSM)</i>, Zürich, October 2013. <a href="http://dx.doi.org/10.1109/CNSM.2013.6727822">http://dx.doi.org/10.1109/CNSM.2013.6727822</a></p>	

Vaibhav Bajpai, Jürgen Schönwälder: Understanding the Impact of Network Infrastructure Changes using Large-Scale Measurement Platforms, *7th International Conference on Autonomous Infrastructure, Management and Security (AIMS)*, Barcelona, June 2013. [http://dx.doi.org/10.1007/978-3-642-38998-6\\_5](http://dx.doi.org/10.1007/978-3-642-38998-6_5)

Vaibhav Bajpai, Johannes Schauer, Jürgen Schönwälder: NFQL: A Tool for Querying Network Flow Records, *13th IEEE International Symposium on Integrated Network Management (IM)*, Ghent, May 2013. [http://ieeexplore.ieee.org/xpl/freeabs\\_all.jsp?arnumber=6573045](http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=6573045)

Vaibhav Bajpai, Vitali Bashko, Catalin David, Siarhei Kuryla, Vladislav Perelman, Johannes Schauer, Nikolay Melnikov, Anuj Sehgal, Jürgen Schönwälder: Design and Prototype Implementation of the WattsApp Telemetry Platform, *IEEE International Conference on Internet of Things (iThings)*, Besançon, November 2012. <http://dx.doi.org/10.1109/GreenCom.2012.21>

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

Vaibhav Bajpai, Nikolay Melnikov, Anuj Sehgal, Jürgen Schönwälder: Flow-based Identification of Failures Caused by IPv6 Transition Mechanisms, *6th Conference on Autonomous Infrastructure, Management and Security (AIMS)* Luxembourg, June 2012. [http://dx.doi.org/10.1007/978-3-642-30633-4\\_19](http://dx.doi.org/10.1007/978-3-642-30633-4_19)

INTERNET DRAFTS      Marcelo Bagnulo, Trevor Burbridge, Sam Crawford, Jürgen Schönwälder and Vaibhav Bajpai, Large Measurement Platform Protocol: draft-bagnulo-lmap-http, Internet Draft, September 2014. <http://tools.ietf.org/html/draft-bagnulo-lmap-http-03>

Jürgen Schönwälder and Vaibhav Bajpai, A YANG Data Model for LMAP Measurement Agents, Internet Draft, September 2014. <http://tools.ietf.org/html/draft-schoenw-lmap-yang-01>

Vaibhav Bajpai and Jürgen Schönwälder, Measuring the Effects of Happy Eyeballs: draft-bajpai-happy. Internet Draft, July 2013. <http://tools.ietf.org/html/draft-bajpai-happy-01>

TECHNICAL ARTICLES      Evaluating the Effectiveness of Happy Eyeballs, *RIPE Labs Article*, June 2013. [https://labs.ripe.net/Members/vaibhav\\_bajpai/evaluating-the-effectiveness-of-happy-eyeballs](https://labs.ripe.net/Members/vaibhav_bajpai/evaluating-the-effectiveness-of-happy-eyeballs)

PAST PROFESSIONAL EXPERIENCES AND EDUCATION      **Infosys Technologies Ltd**, Bangalore, India      Jul 2009—Jun 2010  
Systems Engineer

- Certified, Infosys Mainframe Foundation Developer, PR — 101
- Felicitated as the top entry-level candidate after industrial training (GPA 5/5)

**Uttar Pradesh Technical University**, India      Aug 2005—Jun 2009  
Bachelor of Technology, Computer Science and Engineering

- Bachelors Project: *Dexter, A social experience on top of google search results, under the guidance of Prof. Sanjeev Pippal*
- Graduated as the top student of the class (80.84%)
- Merit position 9<sup>th</sup> amongst all freshmen encompassing 600 affiliated colleges

**Kendriya Vidyalaya Aliganj**, India      Mar 2003—Mar 2005  
Central Board of Secondary Education

- Graduated as the top student of the class (3<sup>rd</sup> in city) in XII (93.4%)
- Merit certificate for 100% marks in Computer Science in XII
- Graduated as the top student of the class in X (86.0%)
- Merit certificate for 100% marks in Science in X (felicitated by the State Govt)
- All-India merit position 35<sup>th</sup> in Junior Mathematics Olympiad, 2002.

PHD PROPOSAL      Understanding the Impact of Network Infrastructure Changes using Large-Scale Measurement Platforms, PhD Proposal, September 2013.

MASTERS THESIS	<p>F(v2): A Complete System Integration of the Network Flow Query Language, Masters Thesis, August 2012  <a href="http://cnds.eecs.jacobs-university.de/archive/msc-2012-vbajpai.pdf">http://cnds.eecs.jacobs-university.de/archive/msc-2012-vbajpai.pdf</a></p>
TALKS	<p>Large Measurement Platform Protocol, <i>LMAP Working Group Meeting at IETF 91</i>, Honolulu, November 2014.  <a href="http://www.ietf.org/proceedings/91/slides/slides-91-lmap-8.pdf">http://www.ietf.org/proceedings/91/slides/slides-91-lmap-8.pdf</a></p> <p>Measurement Research within the Python3 Ecosystem, <i>MAT Working Group Meeting at RIPE 69</i>, London, November 2014. <a href="https://ripe69.ripe.net/archives/video/10125">https://ripe69.ripe.net/archives/video/10125</a></p> <p>Lessons Learned From Using the RIPE Atlas Platform for Measurement Research, <i>MAT Working Group Meeting at RIPE 68</i>, Warsaw, May 2014. <a href="https://ripe68.ripe.net/archives/video/240">https://ripe68.ripe.net/archives/video/240</a></p> <p>Measuring TCP Connection Establishment Times of Dual-Stacked Web Services, <i>Internet Research Task Force (IRTF) Network Management Research Group (NMRG) Workshop on Large-Scale Network Measurements at CNSM 2013</i>, Zürich, October 2013. <a href="http://www.ietf.org/proceedings/interim/2013/10/14/nmrg/slides/slides-interim-2013-nmrg-1-10.pdf">http://www.ietf.org/proceedings/interim/2013/10/14/nmrg/slides/slides-interim-2013-nmrg-1-10.pdf</a></p> <p>NFQL: A Tool for Querying Network Flow Records, <i>Internet Research Task Force (IRTF) Network Management Research Group (NMRG) Workshop on NetFlow/IPFIX at Internet Engineering Task Force (IETF) 87</i>, Berlin, July 2013. <a href="http://www.ietf.org/proceedings/87/slides/slides-87-nmrg-0.pdf">http://www.ietf.org/proceedings/87/slides/slides-87-nmrg-0.pdf</a></p> <p>Measuring the Effects of Happy Eyeballs, <i>v6ops Working Group Meeting at Internet Engineering Task Force (IETF) 87</i>, Berlin, July 2013. <a href="http://www.ietf.org/proceedings/87/slides/slides-87-v6ops-8.pdf">http://www.ietf.org/proceedings/87/slides/slides-87-v6ops-8.pdf</a></p> <p>Measuring the Effectiveness of Happy Eyeballs, <i>IPv6 Working Group Meeting at RIPE 66</i>, Dublin, May 2013. <a href="https://ripe66.ripe.net/archives/video/1208">https://ripe66.ripe.net/archives/video/1208</a></p>
SEMINARS	<p>Global Measurement Framework (13472), <i>A 3-day invitation-only Dagstuhl seminar on Initiating a Coherent Global Measurement Framework for the Internet</i>, LZI Schloss Dagstuhl, Wadern, November 2013. <a href="http://www.dagstuhl.de/13472">http://www.dagstuhl.de/13472</a></p>
TUTORIALS	<p>Large-Scale Measurement Platforms, <i>7th IFIP International Autonomous Infrastructure, Management and Security Conference on Dependable Networks and Services (AIMS)</i>, Barcelona, June 2013. <a href="http://cnds.eecs.jacobs-university.de/tutorials">http://cnds.eecs.jacobs-university.de/tutorials</a></p>
OPEN SOURCE	<p>Author</p> <ul style="list-style-type: none"> <li>— <a href="#">nfql</a>, A C implementation of the network flow query language</li> </ul> <p>Contributor</p> <ul style="list-style-type: none"> <li>— <a href="#">happy</a>, A happy eyeballs [RFC 6555] probing tool.</li> <li>— <a href="#">ncclient</a>, A Python library for NETCONF clients.</li> <li>— <a href="#">libnetconf</a>, A NETCONF library in C intended for building NETCONF clients and servers.</li> <li>— <a href="#">scamper</a>, A scalable and extensible packet prober for active measurement of the Internet.</li> <li>— <a href="#">mtr</a>, A network diagnostic tool.</li> <li>— <a href="#">homebrew-versions</a>, Versioned formulae for the Homebrew package manager.</li> <li>— <a href="#">slam6d</a>, A toolkit with algorithms and methods for processing 3D point clouds.</li> <li>— <a href="#">petascope</a>, A reference implementation of the OGC WCS standard suite.</li> </ul>
ACTIVITIES	<p>Course Lectures</p> <ul style="list-style-type: none"> <li>— Ethernet and Bridges, <i>Computer Networks</i>, September, 2014</li> <li>— Memory Management, <i>Operating Systems</i>, March, 2014</li> <li>— Large-scale Network Measurements, <i>Advanced Computer Networks</i>, March, 2014</li> <li>— Network Address Translators (NAT), <i>Computer Networks</i>, November, 2013</li> <li>— Internet Protocol (IP), <i>Computer Networks</i>, September, 2013</li> </ul>

- Sockets API, *Computer Networks*, September, 2013
- Semaphore Patterns & Memory Management, *Operating Systems*, February, 2013
- NFQL & ncclient, *Advanced Networking*, October, 2012

#### Reviewer

- IFIP/IEEE International Symposium on Integrated Network Management (IM): 2013, 2015
- Springer Journal of Network and Systems Management (JNSM): 2014
- Conference on Autonomous Infrastructure, Management and Security (AIMS): 2013, 2014.
- IEEE Communications Magazine: 2014
- IFIP Networking Conference: 2014
- IEEE/IFIP Network Operations and Management Symposium (NOMS): 2014

#### Students

- Otar Bichiashvili,  
*Large-scale TCP throughput performance measurement over IPv4 and IPv6, Bachelors Thesis, 2015*
- Vlad Victor Ungureanu,  
*LMAP Protocol Implementation, Bachelors Thesis, 2014 - 2015*
- Steffie Jacob Eravuchira,  
*Internet measurements, Masters Thesis, 2013 - 2015*
- Corneliu-Claudiu Prodescu,  
*IPFIX support for NFQL, Masters Project, 2013*
- Durim Morina,  
*A front-end parser for NFQL, Bachelors Thesis, 2013*
- Mjellma Berisha,  
*NETCONF over TLS implementation, Bachelors Project, 2013*

#### Memberships

- IEEE Student Membership
- IEEE Communications Society Membership
- Internet Society Membership
- SIGCOMM Membership
- IFIP TC6 Working Group 6.6 Membership