

# Vaibhav Bajpai

---

## CONTACT INFORMATION

Computer Networks and Distributed Systems  
Jacobs University Bremen

[v.bajpai@jacobs-university.de](mailto:v.bajpai@jacobs-university.de)  
<http://www.vaibhavbajpai.com>

## EDUCATION

**Jacobs University Bremen**, Germany  
Doctor of Philosophy, Computer Science

Sep 2012—Present

- *Dissertation title: Understanding the Impact of Network Infrastructure Changes using Large-Scale Measurement Platforms*
- *Dissertation work under the guidance of Prof. Dr. Jürgen Schönwälder*

**Jacobs University Bremen**, Germany  
Master of Science, Computer Science

Sep 2010—Aug 2012

- *Masters Thesis: A complete system integration of the network flow query language, under the guidance of Prof. Dr. Jürgen Schönwälder*
- *Graduated with a 1.0 grade on the masters thesis, 1.64 overall GPA*
- *Merit-based tuition scholarship and stipend for the entire duration*

## PROFESSIONAL EXPERIENCE

**Jacobs University Bremen**, Germany  
Research Associate

Dec 2012—Present

- *Leone FP7 EU Project: From Global Measurements to Local Management*
- *Flamingo FP7 EU Project: Management of the Future Internet*

**Jacobs University Bremen**, Germany  
Student & Teaching Assistant

Feb 2011—Present

- *Computer Networks*, Fall 2014
- *Internet Measurement and Management Lab*, Spring 2014
- *Computer Networks*, Fall 2013
- *Implementation of the Network Flow Query Language (NFQL)*, Summer 2012
- *Software Engineering Lab*, Spring 2012
- *Networks and Protocols & Algorithms and Data Structures*, Fall 2011
- *Machine Vision Project*, Spring 2011

## PUBLICATIONS

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

Vaibhav Bajpai, Radek Krejčí: Managing SamKnows Probes using NETCONF, *14th IEEE/IFIP Network Operations and Management Symposium (NOMS 2014)*, Krakow, May 2014. <http://dx.doi.org/10.1109/NOMS.2014.6838279>

Vaibhav Bajpai, Jürgen Schönwälder: NETCONF Interoperability Lab, *14th IEEE/IFIP Network Operations and Management Symposium (NOMS 2014)*, Krakow, 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, *9th International Conference on Network and Service Management (CNSM)*, Zürich, October 2013. <http://dx.doi.org/10.1109/CNSM.2013.6727822>

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)

	<p>Vaibhav Bajpai, Johannes Schauer, Jürgen Schönwälder: NFQL: A Tool for Querying Network Flow Records, <i>13th IEEE International Symposium on Integrated Network Management (IM)</i>, Ghent, May 2013. <a href="http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=6573045">http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=6573045</a></p> <p>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, <i>IEEE International Conference on Internet of Things (iThings)</i>, Besançon, November 2012. <a href="http://dx.doi.org/10.1109/GreenCom.2012.21">http://dx.doi.org/10.1109/GreenCom.2012.21</a></p> <p>Vaibhav Bajpai and Vladislav Perelman: A Cross-Platform Open Source 3D Object Reconstruction System using a Laser Line Projector, <i>3rd IEEE Germany Student Conference (GSC)</i>, Passau, November 2012.</p> <p>Vaibhav Bajpai, Nikolay Melnikov, Anuj Sehgal, Jürgen Schönwälder: Flow-based Identification of Failures Caused by IPv6 Transition Mechanisms, <i>6th Conference on Autonomous Infrastructure, Management and Security (AIMS)</i> Luxembourg, June 2012. <a href="http://dx.doi.org/10.1007/978-3-642-30633-4_19">http://dx.doi.org/10.1007/978-3-642-30633-4_19</a></p>	
INTERNET DRAFTS	<p>Marcelo Bagnulo, Trevor Burbridge, Sam Crawford, Jürgen Schönwälder and Vaibhav Bajpai, Large MeAsurement Platform Protocol: draft-bagnulo-lmap-http, Internet Draft, September 2014. <a href="http://tools.ietf.org/html/draft-bagnulo-lmap-http-03">http://tools.ietf.org/html/draft-bagnulo-lmap-http-03</a></p> <p>Jürgen Schönwälder and Vaibhav Bajpai, A YANG Data Model for LMAP Measurement Agents, Internet Draft, September 2014. <a href="http://tools.ietf.org/html/draft-schoenw-lmap-yang-01">http://tools.ietf.org/html/draft-schoenw-lmap-yang-01</a></p> <p>Vaibhav Bajpai and Jürgen Schönwälder, Measuring the Effects of Happy Eyeballs: draft-bajpai-happy. Internet Draft, July 2013. <a href="http://tools.ietf.org/html/draft-bajpai-happy-01">http://tools.ietf.org/html/draft-bajpai-happy-01</a></p>	
TECHNICAL ARTICLES	<p>Evaluating the Effectiveness of Happy Eyeballs, <i>RIPE Labs Article</i>, June 2013. <a href="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</a></p>	
PAST PROFESSIONAL EXPERIENCES AND EDUCATION	<p><b>Infosys Technologies Ltd</b>, Bangalore, India <span style="float: right;">Jul 2009—Jun 2010</span></p> <p>Systems Engineer</p> <ul style="list-style-type: none"> <li>— <i>Certified, Infosys Mainframe Foundation Developer</i>, PR — 101</li> <li>— <i>Felicitated as the top entry-level candidate after industrial training</i> (GPA 5/5)</li> </ul> <p><b>Uttar Pradesh Technical University</b>, India <span style="float: right;">Aug 2005—Jun 2009</span></p> <p>Bachelor of Technology, Computer Science and Engineering</p> <ul style="list-style-type: none"> <li>— <i>Bachelors Project: Dexter, A social experience on top of google search results, under the guidance of Prof. Sanjeev Pippal</i></li> <li>— <i>Graduated as the top student of the class</i> (80.84%)</li> <li>— <i>Merit position 9<sup>th</sup> amongst all freshmen encompassing 600 affiliated colleges</i></li> </ul> <p><b>Kendriya Vidyalaya Aliganj</b>, India <span style="float: right;">Mar 2003—Mar 2005</span></p> <p>Central Board of Secondary Education</p> <ul style="list-style-type: none"> <li>— <i>Graduated as the top student of the class</i> (3<sup>rd</sup> in city) in XII (93.4%)</li> <li>— <i>Merit certificate for 100% marks in Computer Science in XII</i></li> <li>— <i>Graduated as the top student of the class in X</i> (86.0%)</li> <li>— <i>Merit certificate for 100% marks in Science in X (felicitated by the State Govt)</i></li> <li>— <i>All-India merit position 35<sup>th</sup> in Junior Mathematics Olympiad, 2002.</i></li> </ul>	
PHD PROPOSAL	<p>Understanding the Impact of Network Infrastructure Changes using Large-Scale Measurement Platforms, PhD Proposal, September 2013.</p>	
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

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>

Measurement Research within the Python3 Ecosystem, *MAT Working Group Meeting at RIPE 69*, London, November 2014.

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>

Measuring TCP Connection Establishment Times of Dual-Stacked Web Services, *Internet Research Task Force (IRTF) Network Management Research Group (NMRG) Workshop on Large-Scale Network Measurements at CNSM 2013*, Zürich, October 2013. <http://www.ietf.org/proceedings/interim/2013/10/14/nmrg/slides/slides-interim-2013-nmrg-1-10.pdf>

NFQL: A Tool for Querying Network Flow Records, *Internet Research Task Force (IRTF) Network Management Research Group (NMRG) Workshop on NetFlow/IPFIX at Internet Engineering Task Force (IETF) 87*, Berlin, July 2013. <http://www.ietf.org/proceedings/87/slides/slides-87-nmrg-0.pdf>

Measuring the Effects of Happy Eyeballs, *v6ops Working Group Meeting at Internet Engineering Task Force (IETF) 87*, Berlin, July 2013. <http://www.ietf.org/proceedings/87/slides/slides-87-v6ops-8.pdf>

Measuring the Effectiveness of Happy Eyeballs, *IPv6 Working Group Meeting at RIPE 66*, Dublin, May 2013. <https://ripe66.ripe.net/archives/video/1208>

## SEMINARS

Global Measurement Framework (13472), A 3-day invitation-only Dagstuhl seminar on Initiating a Coherent Global Measurement Framework for the Internet, LZI Schloss Dagstuhl, Wadern, November 2013. <http://www.dagstuhl.de/13472>

## TUTORIALS

Large-Scale Measurement Platforms, *7th IFIP International Autonomous Infrastructure, Management and Security Conference on Dependable Networks and Services (AIMS)*, Barcelona, June 2013. <http://cnds.eecs.jacobs-university.de/tutorials>

## OPEN SOURCE

Author

- [nfql](#), A C implementation of the network flow query language

Contributor

- [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.
- [mtr](#), A network diagnostic tool.
- [homebrew-versions](#), Versioned formulae for the Homebrew package manager.
- [slam6d](#), A toolkit with algorithms and methods for processing 3D point clouds.
- [petascope](#), A reference implementation of the OGC WCS standard suite.

## ACTIVITIES

Course Lectures

- Ethernet and Bridges, *Computer Networks*, September, 2014
- Memory Management, *Operating Systems*, March, 2014
- Large-scale Network Measurements, *Advanced Computer Networks*, March, 2014
- Network Address Translators (NAT), *Computer Networks*, November, 2013
- Internet Protocol (IP), *Computer Networks*, September, 2013
- 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