

# Vaibhav Bajpai

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## CONTACT INFORMATION

Computer Networks and Distributed Systems  
Jacobs University Bremen

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<http://www.vaibhavbajpai.com>

## 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—Aug 2012

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

**Infosys Technologies Ltd**, Bangalore, India  
Systems Engineer

Jul 2009—Jun 2010

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

## 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*

**Uttar Pradesh Technical University**, India  
Bachelor of Technology, Computer Science and Engineering

Aug 2005—Jun 2009

- *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  
Central Board of Secondary Education

Mar 2003—Mar 2005

- *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.*

PUBLICATIONS	<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.</p> <p>Vaibhav Bajpai, Jürgen Schönwälder: Understanding the Impact of Network Infrastructure Changes using Large-Scale Measurement Platforms, <i>7th International Conference on Autonomous Infrastructure, Management and Security (AIMS)</i>, Barcelona, June 2013. <a href="http://dx.doi.org/10.1007/978-3-642-38998-6_5">http://dx.doi.org/10.1007/978-3-642-38998-6_5</a></p> <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, July 2013. <a href="http://tools.ietf.org/html/draft-bagnulo-lmap-http-00">http://tools.ietf.org/html/draft-bagnulo-lmap-http-00</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>
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>
INVITED TALKS	<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 Réseaux IP Européens (RIPE) 66</i>, Dublin, May 2013. <a href="https://ripe66.ripe.net/archives/video/1208">https://ripe66.ripe.net/archives/video/1208</a></p>

PROJECT MEETINGS	<p>Beyond Happy Eyeballs, <i>4th Leone Plenary, a Collaborative Research Project within the 7th Framework Programme of the European Commission</i>, Bremen, October 2013.</p> <p>Happy Eyeballs and Friends, <i>3rd Leone Plenary, a Collaborative Research Project within the 7th Framework Programme of the European Commission</i>, Helsinki, June 2013.</p> <p>Happy Eyeballs, <i>2nd Leone Plenary, a Collaborative Research Project within the 7th Framework Programme of the European Commission</i>, Rome, February 2013.</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>— <b>NFQL</b>, <i>An efficient C implementation of a stream-based flow query language</i></li> </ul> <p>Contributor</p> <ul style="list-style-type: none"> <li>— <b>ncclient</b>, <i>A Python library for NETCONF clients.</i></li> <li>— <b>libnetconf</b>, <i>A NETCONF library in C intended for building NETCONF clients and servers.</i></li> <li>— <b>mtr</b>, <i>A network diagnostic tool.</i></li> <li>— <b>homebrew-versions</b>, <i>Versioned formulae for the Homebrew package manager.</i></li> <li>— <b>petascope</b>, <i>A reference implementation of the OGC WCS standard suite.</i></li> </ul>
ACTIVITIES	<p>Course Lectures</p> <ul style="list-style-type: none"> <li>— Network Address Translators (NAT), <i>Computer Networks</i>, November, 2013</li> <li>— Internet Protocol (IP), <i>Computer Networks</i>, September, 2013</li> <li>— Sockets API, <i>Computer Networks</i>, September, 2013</li> <li>— <b>Semaphore Patterns &amp; Memory Management</b>, <i>Operating Systems</i>, February, 2013</li> <li>— <b>NFQL &amp; ncclient</b>, <i>Advanced Networking</i>, October, 2012</li> </ul> <p>Reviewer</p> <ul style="list-style-type: none"> <li>— IFIP Networking Conference, 2014.</li> <li>— IEEE/IFIP Network Operations and Management Symposium (NOMS), 2014.</li> <li>— International Conference on Autonomous Infrastructure, Management and Security (AIMS), 2013.</li> <li>— IFIP/IEEE International Symposium on Integrated Network Management (IM), 2013.</li> </ul> <p>Project Supervision</p> <ul style="list-style-type: none"> <li>— RIPE atlas measurements, <i>Masters Project</i></li> <li>— IPFIX support for NFQL, <i>Masters Project</i></li> <li>— A Front-End Parser Implementation for NFQL, <i>Bachelors Thesis</i></li> <li>— NETCONF over TLS implementation, <i>Bachelors Project</i></li> </ul> <p>Memberships</p> <ul style="list-style-type: none"> <li>— IEEE Student Membership</li> <li>— IEEE Communications Society Membership</li> <li>— Internet Society Membership</li> <li>— SIGCOMM Membership</li> <li>— IFIP TC6 Working Group 6.6 Membership</li> </ul>