Michael R. Head, Ph.D.

in linkedin.com/in/suppressingfire

🌐 www.cs.binghamton.edu/~mike

☎ +1(607)821-4963

✉ head@acm.org

Experience

Period	**April 2011 – Current**	
Employer	**Google**	Mountain View, CA
Job Title	**Senior Software Engineer**	

- ▷ *From April 2013:* Member of the engineering team building and operating the *Google Spectrum Database* for TV white space in the US and UK
- ▷ *Through March 2013:* Member of software development group responsible for building a market economy for technical resources
- ▷ Held Software Engineer III and Senior Software Engineer positions during this period

Period	**Sept. 2008 – Jan. 2009, May 2009 – April 2011**	
Employer	**IBM Research**	Hawthorne, NY
Job Title	**Senior Software Engineer**	

- ▷ Member of research group investigating desktop and services clouds as well as cloud management platforms
- ▷ Responsible for both inventing novel approaches to cloud management and delivering production software components for the cloud platform
- ▷ Authored research papers and patent applications
- ▷ Designed and developed software that runs the *Smart Business Cloud Enterprise* and *Smart Business Cloud Enterprise+* services
- ▷ Developed an automated Desktop-as-a-Service multi-tenant prototype for a shared public cloud
- ▷ Developed a novel web-based customer on-boarding tool for a Cloud-based I/T service monitoring and management system
- ▷ Held Co-op, Intern, Post-doctoral Researcher, and Senior Software Engineer positions during these periods

Period	**August 2004 – December 2009**	
Employer	**Binghamton University**	Binghamton, NY
Job Title	**Graduate Research Assistant**	

- ▷ Research group member analyzing and developing the Grid Computing service stack; projects in Java, C, R, and Python involving SOAP, XML, and GridFTP
- ▷ Designed and implemented algorithms, created benchmarks to evaluate performance, and analyzed performance results
- ▷ Authored academic articles for publication
- ▷ Founded and lead the Binghamton University Computer Science Graduate Student Seminar Series

PERIOD	**September 2007 – May 2008**	
EMPLOYER	**Charles River Analytics**	Cambridge, MA
JOB TITLE	**Independent Contractor**	

  ▷ Developed a complex event processor for intrusion detection systems
  ▷ Responsible for developer tools and servlet/JSP-based frontend
  ▷ Worked remotely and independently for the course of the contract

PERIOD	**January 2006 – March 2006**	
EMPLOYER	**Custom Systems Integration**	Endicott, NY
JOB TITLE	**Linux Specialist**	

  ▷ Developed a first of a kind Linux-based product for CSI
  ▷ Designed and developed an internationalized (gettext-enabled) C-based GTK application for the testing of 12 different digital, analog, GPIB, and CAN PCI I/O boards under Red Hat Enterprise Linux
  ▷ Developed and documented the installation and test procedure of the operating system, hardware and drivers
  ☞ First project of the Binghamton University Linux Technology Center

PERIOD	**August 2001 – May 2004**	
EMPLOYER	**Brandeis University**	Waltham, MA
JOB TITLE	**Graduate Research Assistant**	

  ▷ Research group member studying the design of effective groupware solutions
  ▷ Developed a shared editing tool for HTML and JScheme for human subjects experiments studying distributed pair programming

PERIOD	**July 1999 – August 2001**	
EMPLOYER	**IBM Global Services**	Charlotte, NC
JOB TITLE	**Advisory I/T Specialist**	

  ▷ Traveled to several client sites, developed Java-based enterprise solutions for clients in the banking and finance industry

EDUCATION

2009	*Binghamton University*	Binghamton, NY
Ph.D., Computer Science, Grid Computing		GPA 3.966

Dissertation Title: *Analysis and Optimization for Processing Grid-Scale XML Datasets*

2004	*Brandeis University*	Waltham, MA
M.A., Computer Science, Computer Supported Co-operative Work		GPA 3.890

1999	*Binghamton University*	Binghamton, NY
B.S., Computer Science & B.S., Mathematics		GPA 3.461

Skills and Qualifications

LANGUAGES:	Java, C, C++, Python, R, SQL, Protobuf, LaTeX
SYSTEMS:	Linux, Borg, Dremel, Bigtable, MapReduce, Flume (Java and Cpp)
TOOLS:	Make, Bazel, Emacs, Eclipse, Bash, Git, Subversion

Awards and Recognition

2010: Awarded *First, Second* and *Third Invention Plateau*s and *Outstanding Academic Achievement in Graduate Studies in Computer Science*; received *Distinguished Dissertation Award in Engineering and Applied Science*

2009: Received *First Patent Application Invention Achievement Award* and *Graduate Student Award for Excellence in Research*

1999: Inducted *Upsilon Pi Epsilon*; received *Award for Excellence in Mathematical Sciences*

Professional Service and Development

2013: Program Committee member for *IEEE CLOUD 2013*

2012: Program Committee member for *IEEE CLOUD 2012*

2011: Reviewed manuscripts for *IEEE Transactions on Parallel and Distributed Systems, IBM Journal of Research and Development* and *IEEE Transactions on Computers*; Judged student posters and presentations for *Westchester Science and Engineering Fair 2011*

2010: Reviewed submissions for *IEEE/ACM MASCOTS 2010*

2009: Reviewed *Hello! Python*; reviewed submissions for *IEEE HPCC 2009, IEEE ICWS 2009* and *IEEE TPDS*; Executive-board Officer for the *Computer Science Graduate Student Organization*

2008: Student volunteer at *SC '08*; reviewed submissions for *WAIM 2008* and *ICDCIT 2008*

2007: Student volunteer at *SC '07*; reviewed submissions for *ICCS 2007, IEEE/ACM Grid 2007* and *IEEE e-Science 2007*

2006: Student volunteer at *SC '06*; reviewed submissions for *ACM/IEEE SC 2006*

2005: Student volunteer at *SC '05*; reviewed submissions for *IEEE/ACM Grid 2005, IEEE e-Science 2005* and *ACM SAC 2006*'s DSGC track; joined *Institute of Electrical and Electronics Engineers*

2004: Reviewed submissions for *ACM SAC 2005*'s special track on Distributed Systems and Grid Computing (DSGC)

1999: Passed the *Sun Certified Programmer for the Java 2 Platform* examination

1998: Joined *Association for Computing Machinery*

1997: Earned 30 *American Society of Actuaries* credits by passing *Exam 100*

Publications

[1] Andrzej Kochut, Yu Deng, Michael R. Head, Jonathan Munson, Anca Sailer, Hidayatullah Shaikh, Chunqiang Tang, Alexander Amies, Murray Beaton David Geiss, David Herman, Holger Macho, Stephan Pappe, Scott Peddle, Randy Rendahl, Angel E. Tomala-Reyes, Harm Sluiman, Brian Snitzer, Troy Volin, and Hendrik Wagner, "Evolution of the IBM Cloud: Enabling an enterprise cloud services ecosystem," *IBM Journal of Research and Development*, 55(6): 7:1-7:13 (2011)

[2] Yu Deng, Michael R. Head, Andrzej Kochut, Jonathan Munson, Anca Sailer, and Hidayatullah Shaikh, "Introducing Semantics to Cloud Services Catalogs," in *Proceedings of the IEEE 8th Interational Conference on Services Computing (SCC 2011)*, July 4-9, 2011, Washington, DC, USA

[3] Anca Sailer, Michael R. Head, Andrzej Kochut, and Hidayatullah Shaikh, "Graph-based Cloud Service Placement," in *Proceedings of the IEEE 7th International Conference on Services Computing (SCC 2010)*, July 5-10, 2010, Miami, Florida, USA

[4] Michael R. Head, Anca Sailer, Hidayatullah Shaikh, and Dennis Shea, "Towards Self-assisted Troubleshooting for the Deployment of Private Clouds," in *Proceedings of the IEEE 3rd International Conference on Cloud Computing (CLOUD 2010)*, July 5-10, 2010, Miami, Florida, USA

[5] Michael R. Head, Andrzej Kochut, Charles Schulz, and Hidayatullah Shaikh, "Virtual Hypervisor: Enabling Fair and Economical Resource Partitioning in Cloud Environments," in *Proceedings of 12th IEEE/IFIP Network Operations and Management Symposium (NOMS 2010)*, April 19-23, 2010, Osaka, JAPAN

[6] Zacharia Fadika, Michael R. Head, and Madhusudhan Govindaraju, "Parallel and Distributed Approach for Processing Large-Scale XML Datasets," in *Proceedings of The 10th IEEE / ACM International Conference on Grid Computing (GRID 2009)*, October 13-15, 2009, Banff, Alberta, CANADA

[7] Michael R. Head, Anca Sailer, Hidayatullah Shaikh, and Mahesh Viswanathan, "Taking IT Management Services to a Cloud," in *Proceedings of IEEE 2nd International Conference on Cloud Computing (CLOUD-II 2009)*, pp. 175-182, September 21-25, 2009, Rajankunte, Bangalore, INDIA

[8] Michael R. Head and Madhusudhan Govindaraju, "Performance Enhancement with Speculative Execution Based Parallelism for Processing Large-scale XML-based Application Data," in *Proceedings of International Symposium on High Performance Distributed Computing (HPDC 2009)*, pp. 21-30, June 11-13, 2009, Garching, GERMANY

[9] Michael R. Head and Madhusudhan Govindaraju, "Parallel Processing of Large-Scale XML-Based Application Documents on Multi-core Architectures with PiXiMaL," in *Proceedings of the 4th IEEE International Conference on e-Science*, pp. 261-268, December 7-12, 2008, Indianapolis, IN, USA

[10] Onur Demir, Michael R. Head, Kanad Ghose, and Madhusudhan Govindaraju, "Enhancing GridFTP Performance Using Intelligent Gateways," *International Journal of High Performance Computing and Networking* 5(3): 135–143 (2008)

[11] Chaitali Gupta, Rajdeep Bhowmik, Michael R. Head, Madhusudhan Govindaraju, and Weiyi Meng, "Improving Performance of Web Services Query Matchmaking with Automated Knowledge Acquisition," in *Proceedings of IEEE/WIC/ACM International Conference on Web Intelligence* pp. 559–563, 2-5 November 2007, Silicon Valley, CA, USA

[12] Chaitali Gupta, Rajdeep Bhowmik, Michael R. Head, Madhusudhan Govindaraju, and Weiyi Meng, "A Query-based System for Automatic Invocation of Web Services," in *Proceedings of IEEE Conference on Web Services (ICWS), Application Services and Industry Track*, pp. 759–766, July 9-13, 2007, Salt Lake City, Utah, USA

[13] Michael R. Head, "SOA grid design patterns for computer graphics animation," originally published online in the *Grid Computing* section of *IBM Developerworks*, July 11, 2007

[14] Michael R. Head and Madhusudhan Govindaraju, "Approaching a Parallelized XML Parser Optimized for Multi-Core Processors," in *Proceedings of Workshop on Service-Oriented Computing Performance: Aspects, Issues, and Approaches (SOCP '07)*, held in conjunction with High-Performance Distributed Computing 2007 (HPDC 2007), June 27-29, Monterey Bay, CA, USA

[15] Onur Demir, Michael R. Head, Kanad Ghose, and Madhusudhan Govindaraju, "Securing Grid Data Transfer Services with Active Network Portals," in *Proceedings of The 8th IEEE International Workshop on Parallel and Distributed Scientific and Engineering Computing (PDSEC)*, held in conjunction with The 21st International Parallel and Distributed Processing Symposium (IPDPS-07), March 26-30, 2007, Long Beach, CA, USA

[16] Michael R. Head, Madhusudhan Govindaraju, Robert van Engelen and Wei Zhang, "Benchmarking XML Processors for Applications in Grid Web Services," in *Proceedings of SC06 (Supercomputing): International Conference for High Performance Computing, Networking, and Storage*, November 2006, Tampa, FL, USA

[17] Rainer Schmidt, Michael R. Head, Madhusudhan Govindaraju, Michael J. Lewis, and Siegfried Benkner, "Design and Implementation Choices for Implementing Distributed CCA Frameworks," in *Proceedings of GECO-COMPFRAME06: Workshop HPC Grid programming Environments and COmponents and Component and Framework Technology in High-Performance and Scientific Computing* (at HPDC-15) pp. 3–10, June 2006, Paris FRANCE

[18] Madhusudhan Govindaraju, Michael R. Head, and Kenneth Chiu, "XCAT-C++: Design and Performance of a Distributed CCA Framework," in *Proceedings of The 12th Annual IEEE International Conference on High Performance Computing (HiPC)*, December 18-21, 2005, Goa, INDIA

[19] Michael R. Head, Madhusudhan Govindaraju, Aleksander Slominski, Pu Liu, Nayef Abu-Ghazaleh, Robert van Engelen, Kenneth Chiu, and Michael J. Lewis, "A Benchmark Suite for SOAP-based Communication in Grid Web Services," in *Proceedings of SC05 (Supercomputing): International Conference for High Performance Computing, Networking, and Storage*, November 2005, Seattle, WA, USA

[20] Onur Demir, Michael R. Head, Kanad Ghose, and Madhusudhan Govindaraju, "Protecting Grid Data Transfer Services with Active Network Interfaces," in *Proceedings of Grid 2005 - 6th IEEE/ACM International Workshop on Grid Computing*, November 2005, Seattle, WA USA
☞ Selected, as one of the top six papers at the workshop, for presentation in the plenary session and publication in a special edition of the *International Journal of High Performance Computing and Networking*

[21] Svetlena Taneva, Richard Alterman, Kenroy Granville, Michael R. Head and Timothy J. Hickey, "GREWPTool: A System for Studying Online Collaborative Learning," *Brandeis University Computer Science Tech Report #CS-03-239*, 2003, Waltham, MA, USA

Presentations

[1] "Graph-based Cloud Service Placement," July 7, 2010. Given at the *IEEE 7th International Conference on Services Computing* in the Hyatt Regency Miami in Miami, FL

[2] "Towards Self-assisted Troubleshooting for the Deployment of Private Clouds," July 7, 2010. Given at the *IEEE 3rd International Conference on Cloud Computing* in the Hyatt Regency Miami in Miami, FL

[3] "Virtual Hypervisor: Enabling Fair and Economical Resource Partitioning in Cloud Environments," April 19, 2010, given at the *12th IEEE/IFIP Network Operations and Management Symposium* in the Osaka International Convention Center in Osaka, Japan

[4] "Services Cloud: Contributions to Common Cloud Management Platform and Management-as-a-Service," September 16, 2009, given at *IBM Thomas J. Watson Research Center* in Hawthorne, NY

[5] "Performance Enhancement with Speculative Execution Based Parallelism for Processing Large-scale XML-based Application Data," June 11, 2009, given at the *International ACM Symposium on High Performance Distributed Computing*, at *Technischen Universität München* in Garching, Germany

[6] "Dissertation Defense: Analysis and Optimization for Processing Grid-Scale XML Datasets," May 12, 2009, given in defense of my dissertation at *Binghamton University* in Binghamton, NY

[7] "Parallel Processing of Large-Scale XML-Based Application Documents on Multi-core Architectures with PiXiMaL," February 12, 2009, given at the *Department of Biomedical Informatics at Ohio State University Medical Center* in Columbus, OH

[8] "Discovery as a Service for ERMIS," January 27, 2009, given at *IBM Thomas J. Watson Research Center* in Hawthorne, NY

[9] "Parallel Processing of Large-Scale XML-Based Application Documents on Multi-core Architectures with PiXiMaL," December 12, 2008, given at *4th IEEE e-Science conference* at *Indiana Univeristy Perdue University Indianapolis* in Indianapolis, IN

[10] "Proposal Defense: Analysis and Optimization for Processing Grid-Scale XML Datasets," September 12, 2008, given in defense of my dissertation proposal at *Binghamton University* in Binghamton, NY

[11] "Using Modern Revision Control Systems, or 'Saving All Your Work Forever'," October 17, 2007, given for *Binghamton University Computer Science Graduate Seminar Series* in Binghamton, NY

[12] "Approaching a Parallelized XML Parser Optimized for Multi-Core Processors," June 26, 2007, given at *Workshop on Service-Oriented Computing Performance: Aspects, Issues, and Approaches (SOCP 2007)* in Monterey, CA

[13] "Alchemi: A .NET Grid Application Framework," April 20, 2007, given for course *CS 680G: Advanced Grid Computing Seminar*, Binghamton University in Binghamton, NY

[14] "Java Generics vs. C++ Templates," March 26, 2007, guest lecture for *CS580C: Topics in Advanced Object-Oriented Programming*, Binghamton University in Binghamton, NY

[15] "Securing Grid Data Transfer Services with Active Network Portals," March 20, 2007, given at *The 8th IEEE International Workshop on Parallel and Distributed Scientific and Engineering Computing (PDSEC 2007)* in Long Beach, CA

[16] "Benchmarking XML Processors for Applications in Grid Web Services," November 16, 2006, given at *SC06, The International Conference for High Performance Computing Networking and Storage* in Tampa, FL

[17] "Protecting Grid Data Transfer Services with Active Network Interfaces," November 13, 2005, given in plenary session of *Grid 2005 - 6th IEEE/ACM International Workshop on Grid Computing* in Seattle, WA

Patents

[1] **US #8,902,790**, issued 2014-12-02: *Method and apparatus for operating a network mapping tool to perform host discovery* with Anca Sailer, Hidayatullah Shaikh and Mahesh Viswanathan

[2] **US #8,880,558**, issued 2014-11-04: *Cloud services creation based on graph mapping* with Yu Deng, Andrzej Kochut, Jonathan P. Munson, Anca Sailer and Hidayatullah Shaikh

[3] **US #8,433,802**, issued 2013-04-30: *System and method for fair and economical resource partitioning using virtual hypervisor* with Andrzej Kochut, Charles O. Schulz and Hidayatullah H. Shaikh

[4] **US #8,370,490**, issued 2013-02-05: *Cloud service cost-optimal data center assignment* with Yu Deng, Andrzej Kochut, Jonathan P. Munson, Anca Sailer and Hidayatullah H. Shaikh

[5] **US #8,306,865**, issued 2012-11-06: *Pricing remote information technology infrastructure monitoring services* with Anca Sailer and Hidayatullah H. Shaikh

[6] **US #8,301,746**, issued 2012-10-30: *Method and system for abstracting non-functional requirements based deployment of virtual machines* with Andrzej Kochut, Charles O. Schulz and Hidayatullah H. Shaikh

[7] **US #8,244,839**, issued 2012-08-14: *Network problem determination* with Kirk A. Beaty, Anca Sailer and Hidayatullah H. Shaikh

[8] **US #8,140,907**, issued 2012-03-20: *Accelerated virtual environments deployment troubleshooting based on two level file system signature* with Kirk A. Beaty, Anca Sailer, Charles O. Schulz and Hidayatullah H. Shaikh

[9] **US #8,140,905**, issued 2012-03-20: *Incremental problem determination and resolution in cloud environments* with Kirk A. Beaty, Andrzej Kochut and Anca Sailer