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EDUCATION

UNIVERSITY OF MICHIGAN , Ann Arbor MI <i>Computer Science and Engineering, Ph.D.</i> ____thesis: "Network-Oriented Controls of Internet Services" (Advisor: Prof. Kang G. Shin)	2004
CORNELL UNIVERSITY , Ithaca NY <i>Electrical Engineering, M.Eng.</i>	1997
ROSE-HULMAN INSTITUTE OF TECHNOLOGY , Terre Haute IN <i>Computer Engineering, B.S.</i>	1995

WORK EXPERIENCE

IBM T.J. WATSON RESEARCH CENTER , Yorktown Heights NY <i>Research Manager</i>	2007 - present
Manage the Next Generation Platforms group. Our research focuses on network function virtualization (NFV) and software defined networks (SDN) in hybrid clouds. Our recent projects include:	
<ul style="list-style-type: none">• Rearchitecting Network Middleboxes in Enterprise Clouds. We have created a new abstraction called Split/Merge that can migrate stateful flows across middleboxes. We have also implemented "pico" replication to efficiently enable high-availability in NFVs. We are now developing new middleboxes and NFVs to implement DevOps features in microservice-based applications.• Cloud Workload Optimization. As enterprises deploy their applications on the cloud, we continue to develop new methods to leverage cloud infrastructures (e.g., to create infinite memory) and maximize resource utilization (e.g., VM placement and migration in over-committed clouds).• Superclouds. The Superclouds are entire clouds within and across clouds. We have created a nested virtualization layer called the Xen-Blanked that allows running your own hypervisor on top of other Xen-based clouds (e.g., Amazon EC2). We have also explored device virtualization abstractions that enable new ways of wiring applications in a multi-cloud deployment.	
IBM T.J. WATSON RESEARCH CENTER , Hawthorne NY <i>Research Staff Member</i>	2004 - 2007
UNIVERSITY OF MICHIGAN , Ann Arbor MI <i>Graduate Student Research Assistant</i>	1997 - 2004
HP RESEARCH LABS , Palo Alto CA <i>Research Intern</i>	2000, summer
CORNELL UNIVERSITY , Ithaca NY <i>Research Assistant, Teaching Assistant, Programmer</i>	1997, summer

AWARDS *(All IBM awards were given for demonstrating greater than \$10m revenue impact or \$5m cost savings)*

OUTSTANDING TECHNICAL ACHIEVEMENT AWARD , IBM <i>Project Manager and Technical Lead, Analytics for Logical Dependency Mapping (ALDM)</i>	2013
<ul style="list-style-type: none">• Designed and deployed ALDM, an infrastructure discovery framework for cloud migration. ALDM was deployed in many customer engagements. It uses network, process, and log monitoring to construct logical application topologies and risk profiles.	
OUTSTANDING TECHNICAL ACHIEVEMENT AWARD , IBM <i>Principal Investigator and Development Lead, Deep Cloud</i>	2012
<ul style="list-style-type: none">• Designed and implemented Deep Cloud, a Blue Gene/P cloud abstraction layer. As part of the KAUST-IBM Center for Deep Computing Research, Deep Cloud introduces new methods for flexible reservation and dynamic pricing of HPC resources.	
FIRST PLACE , IEEE Scale Challenge <i>Contributor, "A Scalable Ensemble-based Oil-Reservoir Simulations using Blue Gene/P-as-a-Service"</i>	2011
OUTSTANDING INNOVATION AWARD , IBM <i>Principal Investigator and Development Lead, Cyano</i>	2007
<ul style="list-style-type: none">• Designed and implemented Cyano, a social network-based framework for co-creating IT processes. Cyano successfully enabled capturing and enriching of over 550 IBM IT best practices with a community of over 12,000 subject matter experts.	
OUTSTANDING TECHNICAL ACHIEVEMENT AWARD , IBM <i>Principal Investigator and Development Lead, Integrated Infrastructure Intelligence (i3)</i>	2006
<ul style="list-style-type: none">• Designed and implemented i3, a distributed infrastructure monitoring and management application. It introduced an inference algorithm that uses historical failure patterns for discovering hidden topologies, even in the presence of noisy and incomplete data. i3 was as part of an engagement with a large cable provider to monitor over 400,000 infrastructure components.	

PROFESSIONAL ACTIVITIES

TECHNICAL PROGRAM COMMITTEE

USENIX Annual Technical Conference 2016, IEEE INFOCOM 2016, ACM SIGCOMM HotMiddlebox 2015, IEEE INFOCOM 2015, IEEE INFOCOM 2014, ACM Symposium on Cloud Computing 2013, NSF Global Environment for Network Innovations Solicitation 4 2013, IEEE/ACM International Symposium on Quality of Service 2013, IEEE INFOCOM 2013, CNSM 2012, IEEE INFOCOM 2012

THESIS COMMITTEE

Xiaoen Ju, The University of Michigan, Daniel Williams, Cornell University (Graduated 2012), Yun Mao, The University of Pennsylvania (Graduated 2008)

SELECTED PUBLICATIONS & PATENTS (Complete list is available at <http://jamjoom.net/pubs>)

- Murad Kablan, Blake Caldwell, Richard Han, Hani Jamjoom and Eric Keller, "Stateless Network Functions," In the **ACM SIGCOMM Workshop on Hot Topics in Middleboxes and Network Function Virtualization**, London, UK, August 2015.
- Shriram Rajagopalan and Hani Jamjoom, "App-Bisect: Autonomous Healing for Microservice-Based Apps," In the proceedings of **USENIX Workshop on Hot Topics in Cloud Computing (HotCloud)**, Santa Clara, CA, June 2015.
- Alex Van't Hof, Hani Jamjoom, Jason Neih, and Dan Williams, "Flux: Multi-surface Computing in Android," In the proceedings of **ACM EuroSys**, Bordeaux, France, April 2015.
- Hani Jamjoom, Dan Williams, and Upendra Sharma, "Don't Call Them Middleboxes, Call Them Middlepipes," In the **ACM SIGCOMM Workshop on Hot Topics in Software Defined Networking (HotSDN)**, Chicago, IL, August 2014.
- Dan Williams, Hani Jamjoom, and Hakim Weatherspoon, "Software Defining System Devices with the 'Banana' Double-Split Driver Model," In the proceedings of **USENIX HotCloud**, Philadelphia, PA, June 2014.
- Dan Williams, Shuai Zheng, Xiangliang Zhang, and Hani Jamjoom, "TideWatch: Fingerprinting the Cyclicity of Big Data Workloads," In the proceedings of **IEEE INFOCOM**, Toronto, Canada, April 2014.
- Shriram Rajagopalan, Dan Williams, and Hani Jamjoom, "Pico Replication: A High Availability Framework for Middleboxes," In the **ACM Symposium on Cloud Computing (SoCC)**, Santa Clara, California, Oct 2013.
- Dan Williams and Hani Jamjoom, "Cementing High Availability in OpenFlow with RuleBricks," In the **ACM SIGCOMM Workshop on Hot Topics in Software Defined Networking (HotSDN)**, Hong Kong, China, August 2013.
- Shriram Rajagopalan, Dan Williams, Hani Jamjoom, Andy Warfield, "Split/Merge: System Support for Elastic Execution in Virtual Middleboxes," In the proceedings of **USENIX NSDI**, Lombard, Illinois, April 2013.
- Zuhair Khayyat, Karim Awara, Amani Alonazi, Hani Jamjoom, Dan Williams, Panos Kalnis, "Mizan: A System for Dynamic Load Balancing in Large-scale Graph Processing," In the proceedings of **ACM EuroSys**, Prague, Czech Republic, April 2013.
- Dan Williams, Hani Jamjoom, and Hakim Weatherspoon, "Plug into the Supercloud," In **IEEE Internet Computing Special Issue on Virtualization**, Mar/Apr 2013.
- Dan Williams, Hani Jamjoom, and Hakim Weatherspoon. "The Xen-Blanket: Virtualize Once, Run Everywhere," In the proceedings of **ACM EuroSys**, Bern, Switzerland, April 2012.
- Dan Williams, Hani Jamjoom, Yew-Huey Liu, and Hakim Weatherspoon, "Overdriver: Handling Memory Overload in an Oversubscribed Cloud," In the proceedings of **ACM Virtual Execution Environments**, Newport Beach, CA, March 2011.
- Vivek Shrivastava, Petros Zerfos, Kang-won Lee, Hani Jamjoom, Yew-Huey Liu, Suman Banerjee, "Application-aware Virtual Machine Migration in Data Centers," In the proceedings of **IEEE INFOCOM Mini Conference**, Shanghai, China, 2011.
- Hanghang Tong, Huiming Qu, Hani Jamjoom, Christos Faloutsos, "iPoG: Fast Interactive Proximity Querying on Graphs," In the proceedings of the **ACM Conference on Information and Knowledge Management (CIKM)**, Hong Kong, China, Nov 2009
- Hanghang Tong, Huiming Qu, and Hani Jamjoom, "Measuring Proximity on Graphs with Side Information," In the proceedings of **IEEE International Conference on Data Mining (ICDM)**, Pisa, Italy, December 2008.
- Yun Mao, Hani Jamjoom, Shu Tao, and Jonathan Smith, "NetworkMD: Topology Inference and Failure Diagnosis in the Last Mile," In the proceedings of **Internet Measurement Conference (IMC)**, San Diego, CA, October 2007.
- Hani Jamjoom and Kang G. Shin, "On the Role and Controllability of Persistent Clients in Traffic Aggregates," In the proceedings of **IEEE/ACM Transactions on Networking**, Vol. 14, No. 2, April 2006.
- Hani Jamjoom, Padmanbhan Pillai, and Kang G. Shin, "Re-synchronization and Controllability of Bursty Service Requests," In the proceedings of **IEEE/ACM Transactions on Networking**, Vol. 12, No. 4, August 2004.
- Hani Jamjoom and Kang G. Shin, "Persistent Dropping: An Efficient Control of Traffic Aggregates," In the proceedings of **ACM SIGCOMM**, Karlsruhe, Germany, August 2003.

_____patents (Patent inventors are listed in alphabetical order)

- Hani Jamjoom, Shriram Rajagopalan, and Dan Williams, "Fault Tolerance Solution For Stateful Applications," 9,110,864 (Issued Aug 18, 2015)
- Monther Abdullah Al-Dawsari, Hani Jamjoom, Mark E. Podlaseck, Huiming Qu, Yaoping Ruan, Denis R. Saure, Zon-Yin Shae, and Anshul Sheopuri, "Dynamic pricing of a resource," 8,458,011 (Issued Jun 4, 2013).
- Hani Jamjoom, Kang-won Lee, Vivek Shrivastava, and Petros Zerfos, "A Method for Network-aware Virtual Machine Migration in Datacenters," US20120011254 (Issued Apr 14, 2013).
- Hani Jamjoom, Sambit Sahu, Debanjan Saha, "Method & System for Micro-locking Web Content," US20110296177 (Issued April 30, 2013).
- Hani Jamjoom, Huiming Qu, and Hanghang Tong, "Efficient Calculation of Node Proximity on Graphs with Side Information," US8346766 (Issued Jan 1, 2013).
- Nikolaos Anerousis, Hani Jamjoom, Debanjan Saha, Shu Tao, and Jin Zhou, "System and Method for Monitoring Large-scale Distribution Networks by Data Sampling," China ZL200810002695.1 (Issued May 23, 2012).
- Nikolaos Anerousis, Hani Jamjoom, Debanjan Saha, Ramendra Sahoo, and Zon-Yin Shae, "System and Method for Constructing Flexible Ordering to Improve Productivity and Efficiency in Process Flows," US8036865 (Issued Oct 11, 2011).
- Nikolaos Anerousis, Hani Jamjoom, Yun Mao, and Shu Tao, "Method and Apparatus for Component Association Inference, Failure Diagnosis and Misconfiguration Detection Based on Historical Failure Data," US7937347 (Issued May 3, 2011).