

# KRISHNA P. GUMMADI

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## RESEARCH INTERESTS

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I am broadly interested in the areas of networking and distributed systems. My research is motivated by the challenges arising out of the growing “complexity” (i.e., scale, heterogeneity, decentralized control, and dynamic evolution) of today's networked systems. Example complex systems that I am currently studying include the Internet infrastructure, content distribution systems, cloud computing infrastructures, and Web 2.0 apps like online social networks. My projects focus both on understanding how existing systems work in practice and on building new systems. I use a combination of measurement, analysis, design, implementation, and deployment methodologies to achieve my goals.

## EMPLOYMENT HISTORY

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<b>Max Planck Institute for Software Systems</b> Head, Networked Systems Research Group	Saarbruecken, Germany October 2005 – <i>Present</i>
<b>University of Washington</b> Research Assistant	Seattle, WA, USA September 2000 – October 2005
<b>Intel Research Lab, Berkeley</b> Summer Intern	Berkeley, CA, USA 2003
<b>ICSI, Berkeley</b> Summer Intern	Berkeley, CA, USA 2002
<b>Microsoft Research, Redmond</b> Summer Intern	Redmond, WA, USA 2001
<b>Dartfish (Formerly Inmotion Technologies)</b> Summer Intern	Fribourg, Switzerland 2000
<b>Ecole Polytechnique Federale de Lausanne</b> Summer Intern	Lausanne Switzerland 1999

## EDUCATION BACKGROUND

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University of Washington  
Ph.D. in Computer Science and Engineering

Seattle, WA  
October 2005

*Dissertation topic: "Measurement-driven Modeling and Design of Large-scale Distributed Systems"*  
*Advisors: Steven D. Gribble and Henry M. Levy*

University of Washington  
M.S. in Computer Science and Engineering

Seattle, WA  
December 2002

Indian Institute of Technology  
B. Tech. in Computer Science and Engineering

Madras, India  
August 2000

## TEACHING EXPERIENCE

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### **Max Planck Institute for Software Systems and University of Saarland, Germany**

Instructor, co-taught advanced undergraduate course in data networks, Summer 2007

### **University of Washington, Seattle**

Teaching Assistant for CSE 142, an undergraduate course in programming, Winter 2001

Teaching Assistant for CSE 370, an undergraduate course in digital design, Autumn 2000

Guest lecture: "Distributed Hash Tables and their application to the design of Peer-to-Peer systems," in the professional master's course on operating systems, Autumn 2004

### **Indian Institute of Technology, Madras**

Teaching Assistant for CS 101, an undergraduate course in programming, Fall 1999

## AWARDS

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**Best student paper:** Usenix/ACM Symposium on Operating Systems Design and Implementation (OSDI) 2002

**Best student paper:** ACM SIGCOMM Internet Measurement Workshop (IMW) 2002

**Best paper:** SPIE/ACM Conference on Multimedia Computing and Networking (MMCN) 2002

REFEREED PUBLICATIONS: 30

TOTAL CITATIONS: 5679 (SOURCE: GOOGLE SCHOLAR)

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- [1] Bimal Viswanath, Ansley Post, Krishna P. Gummadi, and Alan Mislove, "An Analysis of Social Network-based Sybil Defenses." In *Proc. of the ACM SIGCOMM 2010*, New Delhi, India, August 2010.
- [2] Meeyoung Cha, Hamed Haddadi, Fabricio Benevenuto, and Krishna P. Gummadi, "Measuring User Influence in Twitter: The Million Follower Fallacy." In *Proc. of the 4th International AAAI Conference on Weblogs and Social Media (ICWSM)*, Washington, DC, May 2010. (Cited by 3)
- [3] Marcel Dischinger, Massimiliano Marcon, Saikat Guha, Krishna P. Gummadi, Ratul Mahajan, and Stefan Saroiu, "Glasnost: Enabling End Users to Detect Traffic Differentiation." In *Proc. of the 7th Usenix Symposium on Networked Systems Design and Implementation (NSDI)*, San Jose, CA, April 2010.

- [4] Alan Mislove, Bimal Viswanath, Krishna P. Gummadi, and Peter Druschel, "You are who you know: Inferring user profiles in Online Social Networks." In *Proc. of the 3rd ACM International Conference on Web Search and Data Mining (WSDM)*, New York, NY, February 2010. (Cited by 4)
- [5] Nuno Santos, Krishna P. Gummadi, and Rodrigo Rodrigues, "Towards Trusted Cloud Computing." In *Proc. of the Workshop On Hot Topics in Cloud Computing (HotCloud)*, San Diego, CA, June 2009. (Cited by 18)
- [6] Bimal Viswanath, Alan Mislove, Meeyoung Cha, and Krishna P. Gummadi, "On the Evolution of User Interaction in Facebook." In *Proc. of the 2nd ACM SIGCOMM Workshop On Social Networks (WOSN)*, Barcelona, Spain, August 2009. (Cited by 19)
- [7] Meeyoung Cha, Alan Mislove, and Krishna P. Gummadi, "A Measurement-driven Analysis of Information Propagation in the Flickr Social Network." In *Proc. of the 18th International World Wide Web Conference (WWW)*, Madrid, Spain, April 2009. (Cited by 26)
- [8] Andreas Haeberlen, Rodrigo Rodrigues, Krishna P. Gummadi, and Peter Druschel, "Pretty Good Packet Authentication." In *Proc. of the 4th Workshop on Hot Topics in System Dependability (HotDep)*, San Diego, CA, December 2008. (Cited by 1)
- [9] Marcel Dischinger, Alan Mislove, Andreas Haeberlen, and Krishna P. Gummadi, "Detecting BitTorrent Blocking." In *Proc. of the 8th Usenix/ACM SIGCOMM Internet Measurement Conference (IMC)*, Vouliagmeni, Greece, October 2008. (Cited by 27)
- [10] Marcel Dischinger, Andreas Haeberlen, Ivan Beschastnikh, Krishna P. Gummadi, and Stefan Saroiu, "SatelliteLab: Adding Heterogeneity to Planetary-Scale Testbeds." In *Proc. of the ACM SIGCOMM 2008*, Seattle, WA, August 2008. (Cited by 10)
- [11] Meeyoung Cha, Alan Mislove, Ben Adams, and Krishna P. Gummadi, "Characterizing Social Cascades in the Flickr Social Network." In *Proc. of the 1st ACM SIGCOMM Workshop On Social Networks (WOSN)*, Seattle, WA, August 2008. (Cited by 29)
- [12] Alan Mislove, Hema Swetha Koppula, Krishna P. Gummadi, Peter Druschel, and Bobby Bhattacharjee, "Growth of the Flickr Social Network." In *Proc. of the 1st ACM SIGCOMM Workshop On Social Networks (WOSN)*, Seattle, WA, August 2008. (Cited by 51)
- [13] Alan Mislove, Ansley Post, Peter Druschel, and Krishna P. Gummadi, "Ostra: Leveraging Trust to Thwart Unwanted Communication." In *Proc. of the 5th Usenix Symposium on Networked Systems Design and Implementation (NSDI)*, San Francisco, CA, April 2008. (Cited by 33)
- [14] Marcel Dischinger, Andreas Haeberlen, Krishna P. Gummadi, and Stefan Saroiu, "Characterizing Residential Broadband Networks." In *Proc. of the 7th Usenix/ACM SIGCOMM Internet Measurement Conference (IMC)*, San Diego, CA, October 2007. (Cited by 86)
- [15] Alan Mislove, Massimiliano Marcon, Krishna P. Gummadi, Petr Druschel, and Samrat Bhattacharjee, "Measurement and Analysis of Online Social Networks." In *Proc. of the 7th Usenix/ACM SIGCOMM Internet Measurement Conference (IMC)*, San Diego, CA, October 2007. (Cited by 293)
- [16] Andrew G. Miklas, Kiran K. Gollu, Kelvin K.W. Chan, Stefan Saroiu, Krishna P. Gummadi, and Eyal de Lara, "Exploiting Social Interactions in Mobile Systems." In *Proc. of the 9th International Conference on Ubiquitous Computing (UbiComp)*, Innsbruck, Austria, September 2007. (Cited by 47)
- [17] Alan Mislove, Krishna P. Gummadi, and Peter Druschel, "Exploiting Social Networks for Internet Search." In *Proc. of the 5th ACM Workshop on Hot Topics in Networks (HotNets)*, Irvine, CA, November 2006. (Cited by 62)
- [18] Andreas Haeberlen, Marcel Dischinger, Krishna P. Gummadi, and Stefan Saroiu, "Monarch: A Tool to Emulate Transport Protocol flowover the Internet at Large." In *Proc. of the 6th*

- Usenix/ACM SIGCOMM Internet Measurement Conference (IMC)*, Rio De Janeiro, Brazil, October 2006. (Cited by 16)
- [19] Krishna P. Gummadi, Harsha Madhyastha, Steven D. Gribble, Henry M. Levy, and David J. Wetherall, "Improving the Reliability of Internet Paths with One-hop Source Routing." In *Proc. of the 6<sup>th</sup> Usenix/ACM Symposium on Operating Systems Design and Implementation (OSDI)*, San Francisco, CA, December 2004. (Cited by 181)
- [20] Prasanna Ganesan, Krishna P. Gummadi, and Hector Garcia-Molina, "Canon in G Major: Designing DHTs with Hierarchical Structure." In *Proc. of the 24<sup>th</sup> IEEE International Conference on Distributed Computing Systems (ICDCS)*, Tokyo, Japan, March, 2004. (Cited by 119)
- [21] Krishna P. Gummadi, Richard J. Dunn, Stefan Saroiu, Steve D. Gribble, Henry M. Levy, and John Zahorjan, "Measurement, Modeling, and Analysis of a Peer-to-Peer File-Sharing Workload." In *Proc. of the 19<sup>th</sup> ACM Symposium on Operating Systems Principles (SOSP)*, Bolton Landing, NY, October 2003. (Cited by 748)
- [22] Krishna P. Gummadi, Ramakrishna Gummadi, Sylvia Ratnasamy, Steven D. Gribble, Ion Stoica, and Scott Shenker, "The Impact of DHT Routing Geometry on Resilience and Proximity." In *Proc. of the ACM SIGCOMM 2003*, Karlsruhe, Germany, August 2003. (Cited by 544)
- [23] Stefan Saroiu, Krishna P. Gummadi, and Steven D. Gribble, "Measuring and Analyzing the Characteristics of Napster and Gnutella Hosts." In *ACM Multimedia Systems Journal*, Volume 9, Number 2, pp. 170-184, Springer-Verlag, August 2003. (Cited by 255)
- [24] Krishna P. Gummadi, Madhavarapu J. Pradeep, and C. Siva Ram Murthy, "An Efficient Primary Segmented Backup Scheme for Dependable Real-Time Communication in Multihop Networks." In *IEEE/ACM Transactions on Networking*, Volume 11, Issue 1, February 2003. (Cited by 75)
- [25] Stefan Saroiu, Krishna P. Gummadi, Richard J. Dunn, Steven D. Gribble, and Henry M. Levy, "An Analysis of Internet Content Delivery Systems." In *Proc. of the 5<sup>th</sup> Usenix/ACM Symposium on Operating Systems Design and Implementation (OSDI)*, Boston, MA, December 2002. (Cited 502)
- [26] Krishna P. Gummadi, Stefan Saroiu, and Steven D. Gribble, "King: Estimating Latency between Arbitrary Internet End Hosts." In *Proc. of the 2<sup>nd</sup> Usenix/ACM SIGCOMM Internet Measurement Workshop (IMW)*, Marseille, France, November 2002. (Cited by 442)
- [27] Stefan Saroiu, P. Krishna Gummadi, and Steven D. Gribble, "Exploring the Design Space of Distributed and Peer-to-Peer Systems: Comparing the Web, TRIAD, and Chord/CFS." In *Proc. of the 1<sup>st</sup> International Workshop on Peer-to-Peer Systems*, Cambridge, MA, March 2002. (Cited by 20)
- [28] Stefan Saroiu, P. Krishna Gummadi, and Steven D. Gribble, "A Measurement Study of Peer-to-Peer File Sharing Systems." In *Proc. of the SPIE/ACM Conference on Multimedia Computing and Networking 2002 (MMCN)*, San Jose, CA, January 2002. (Cited by 2058)
- [29] G. Ranjith, G. P. Krishna, and C. S. R. Murthy, "A Distributed Primary-Segmented Backup Scheme for Dependable Real-Time Communication in Multihop Networks." In *IEEE Workshop on Fault-Tolerant Parallel and Distributed Systems*, Ft. Lauderdale, FL, April 2002. (Cited by 8)
- [30] P. Krishna Gummadi, M. Pradeep, and C. Siva Ram Murthy, "A Segmented Backup Scheme for Dependable Real-Time Communication in Multihop Networks." In *Proc. of the 8<sup>th</sup> IEEE International Workshop on Parallel and Distributed Real-time Systems*, Cancun, Mexico, May 2000. (Cited by 2)

## STUDENT ADVISING

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- Past Students:
  - Meeyoung Cha (postdoc, 2010) is currently an Assistant Professor at KAIST, Korea
  - Alan Mislove (Ph.D., 2009) is currently an Assistant Professor at NorthEastern University
  - Alexey Reznichenko (masters, 2009) is currently a Ph.D. student at MPI-SWS
  - Malveeka Tewari (bachelors, 2008) is currently a Ph.D. student at UCSD
- Current Students:
  - Marcel Dischinger (Ph.D., 2005)
  - Massimiliano Marcon (Ph.D., 2006)
  - Nuno Santos (Ph.D., 2008)
  - Bimal Viswanath (Ph.D., 2008).

## PROFESSIONAL SERVICE

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- Program Committees:
  - SIGCOMM 2007, 2008, and 2009
  - CoNext 2008 and 2009
  - NSDI 2007, 2008, and 2009
  - IMC 2010
  - WWW 2010
  - INFOCOM 2008
  - WOSN 2008 and 2009
  - ICDCS 2007
  - HotNets 2007 and 2009
  - IPTPS 2006
  - WORLDS 2006.
- Poster Session Committees:
  - SIGCOMM 2006, 2009, and 2010
  - NSDI 2007 and 2008 (co-chair)
- Program Committee Co-chair:
  - ROADS 2008
  - EuroSys Authoring Workshop 2007
- Guest Editor of a special issue of IEEE J-SAC on *Measurement of Internet Topologies*
- Steering Committee of *Measurement Lab* (2009 - present)