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Indranil Gupta

(CV Last updated: Oct. 4, 2017)

CURRENT POSITION

- Professor (100%), Dept. of Computer Science, University of Illinois at Urbana-Champaign, IL 61801.
- 0% Professor, ECE, UIUC.
- 0% Professor, ITI, UIUC.

EDUCATION

Ph.D.	Computer Science Cornell University, Ithaca, NY, USA.	Jan. 2004
Master of Science	Computer Science Cornell University, Ithaca, NY, USA.	2001
Bachelor of Technology	Computer Science and Engineering Indian Institute of Technology (IIT), Chennai, India.	1998

RESEARCH INTERESTS

Distributed Protocols; Cloud Computing; Large-Scale Distributed Systems; Peer-to-peer systems, Sensor Networks.

RESEARCH AND WORK EXPERIENCE

- [2017-Present] University of Illinois at Urbana Champaign: Professor, Dept. of Computer Science. Leader of the Distributed Protocols Research Group (DPRG): <http://dprg.cs.uiuc.edu>
- [2009-Aug. 2011, Jul. 2012-2017] University of Illinois at Urbana Champaign: Associate Professor, Dept. of Computer Science.
- [2015-Present] Lead PI, BOCCE Center (Blue and Orange Cloud Computer Center at Illinois): <http://indy.cs.illinois.edu/BOCCE/index.html>
- [August 2011-July 2012] Visiting Research Scientist, Google, Mountain View (Cluster Management). Full-time employee at Google during this time (on unpaid leave from Illinois).
- [2003-2009] University of Illinois at Urbana Champaign: Assistant Professor, Dept. of Computer Science.
- [1998-2003] Cornell University: Graduate Teaching Assistant and Graduate Research Assistant with Dr. Kenneth P. Birman, Spinglass Project.

- [June-August 2001] Microsoft Research Labs, Cambridge, UK: Intern, Distributed Systems Group.
- [June-August 2000] IBM Research, T.J. Watson Center: Intern, Océano Server Farm Project.
- [1997-1998] Indian Institute of Technology (IIT), Chennai (India): Undergraduate Research.

AWARDS

- [2017] Best Paper Award, 17th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid), 2017.
- [2016] Best Paper Award, IEEE International Conference on Cloud Engineering (IC2E), 2016.
- [2015] Best Paper Award, 12th IEEE International Conference on Autonomic Computing (ICAC), 2015.
- [2015] Nominee for Best Paper Award, 12th International Conference on Quantitative Evaluation of Systems (QEST), 2015.
- [2012] Best Paper Award, 1st International Workshop on Big Data, Streams and Heterogeneous Source Mining (BigMine), 2012.
- [2010] Faculty Fellowship, Academy for Entrepreneurial Leadership, UIUC (2010). Awarded to only 5 faculty campus-wide.
- [2009-2010] Center for Advanced Studies/Beckman Fellowship, UIUC.
- [2008] Junior Xerox Award for Faculty Research, UIUC (2008). Awarded to only 4 assistant professors across all Departments of Engineering at UIUC.
- [2008] co-PI on the Cloud Computing Testbed at University of Illinois. Funding from Yahoo!, HP, Intel and NSF.
- [2005] National Science Foundation Faculty Early CAREER Development Award.
- [2003-Present] Listed in the UIUC "List of Teachers Ranked as Excellent" ten times - during Fall 2003, Fall 2004, Fall 2005, Spring 2006, Spring 2007, Fall 2007, Spring 2008, Spring 2011, Fall 2012, Spring 2013. The ratings in Fall 2005, Spring 2006, Fall 2007, Spring 2008, Spring 2013 were in the *-ed (Outstanding) category. Based on ICES student feedback forms.

STUDENT AWARD WINNERS

- [2017] Shadi Noghabi: Microsoft Research Dissertation Grant, 2017. (Among 12 fellowship winners across the US.)
- [2017] Shadi Noghabi: Mavis Future Faculty Fellowship (College of Engineering at UIUC), 2017-18.
- [2017] Jayasi Mehar: One of the nationwide winners of the Siebel Scholar Award, 2017.
- [2017] Rui Yang: Richard T. Cheng Endowed Fellowship, CS@UIUC, 2017.
- [2016] Rui Yang: Microsoft Women's Fellowship, 2016-17.
- [2016] Le Xu: David J. Kuck Outstanding MS Thesis Award, 2015.
- [2016] Muntasir Rahman: Feng Chen Memorial Award, 2016.
- [2015] Muntasir Rahman: CS Excellence Fellowship, UIUC, 2014-2015.
- [2015] Le Xu: Best TA Award, Fall 2015 (for CS425)
- [2015] Yosub Shin: First place, HackIllinois Competition
- [2014] Muntasir Rahman: VMWare Graduate Fellowship, 2014-2015 (Among 4 fellowship winners worldwide).

- [2014] Tej Chajed: NSF Graduate Fellowship, 2014-2017.
- [2014] Mayank Pundir: Siebel Scholar, 2014-2015.
- [2014] Tej Chajed: C. W. Gear Outstanding Undergraduate Award, 2014.
- [2007] Brian Cho: Cohen Fellowship for Early CS Ph.D. Students.
- [2009] Imranul Hoque: State Farm Grand Prize in Siebel Center's Computing Habitat Competition.
- [2007] Brian Cho: C. W. Gear Award for Outstanding CS Undergraduate, UIUC.
- [2006] Thadpong Pongthawornkamol: David J. Kuck Best MS Thesis Award, Department of Computer Science, UIUC.

RESEARCH FUNDING AND SUPPORT

- [Oct 2015-2016] (lead PI: Gupta, \$300,000, co-PIs: Nahrstedt, Campbell) Gift from Microsoft (Azure team). Seed funding for BOCCE Center that Gupta leads.
<http://indy.cs.illinois.edu/BOCCE/index.html>
- [Oct 2014 - Sep 2017] (lead PI: Gupta, \$584,000, co-PIs: Vaidya, Meseguer) National Science Foundation: CNS 1409416, Availability-Consistency Tradeoffs in Key-Value and NoSQL Storage Systems.
- [Jul 2013 - Jun 2017] (sole PI, \$480,000) National Science Foundation: CNS 1319527, Online Global Reconfigurations in Key-Value and NoSQL Cloud Storage Systems.
- [Oct 2014 - Sep 2017] (Senior Personnel, \$1.5 Million lead PI: Nahrstedt) National Science Foundation: 1443013, CIF21 DIBBs: T2-C2: Timely and Trusted Curator and Coordinator Data Building Blocks.
- [Oct 2014 - Present] (co-PI, \$1 Million, lead PI: Rutenbar and Kravets) Google Cloud Research + Education Grant.
- [Apr 2011- Apr 2017] (co-PI, \$6 Million lead PI: Campbell) AFOSR/AFRL: Assured Cloud Computing Center at Illinois <http://assured-cloud-computing.illinois.edu/>
- [Jul 2010 - Jun 2015] (lead PI: Gupta, \$600,000, co-PI: Campbell:) National Science Foundation: CCF 0964471, Tackling and Understanding Intermediate Data in Cloud Applications as a First-Class Citizen.
- [Oct 2014 - Oct 2015] (sole PI, \$10K) Google Cloud Resources Grant.
- [Nov 2014 - Nov 2015] (sole PI) Blue Waters Allocation Grant.
- [May 2010 - May 2012] (co-PI, \$75,000, lead PI: T. Huang) Beckman New Research Directions Funding.
- [Mar 2010 - Feb 2012] (co-PI, \$293,892, lead PI: Abdelzaher) National Science Foundation: CNS 0958314, II-New: Towards Green Data Centers: A Testbed for Thermo-Computational Dynamics.
- [Aug 2008 - Jul 2010] (co-PI, \$200,000, lead PI: Heath) National Science Foundation: IIS 0841765, SGER: Acquisition and Operation of an Experimental Testbed for System-Level Research to Support Data-Intensive Computing Applications. (Cloud Computing Testbed)
- [Aug 2009 - Aug 2010] (co-PI/Senior Personnel, \$100,000, lead PI: Nahrstedt) National Science Foundation CRI 0855129, Exploring Social Trust in Mobile Educational Environments
- [Mar 2005 - Feb 2010] (sole PI: Gupta, \$450,000) National Science Foundation CAREER Grant: CNS 0448246, CAREER: Systematic Design of Distributed Protocols - from Methodologies and Toolkits to Systems.
- [Nov 2009 - Nov 2010] (sole PI) Amazon Web Services Research Grant.

- [Sep 2004 - Aug 2009] (co-PI, \$2.37 Million, lead PI: F. Pena-Mora) National Science Foundation ITR Grant: CMS 0427089 ITR, ITR: IT-Based Collaboration Framework for Preparing Against, Responding to, and Recovering from Disasters Involving Critical Physical Infrastructures.
- [2005-2006] (sole PI) UIUC-INRIA-CNRS Collaboration Grant, Department of Computer Science, University of Illinois at Urbana-Champaign.
- [Summer 2006] (sole PI, \$6K) National Science Foundation grant on Research Experience for Undergraduates (REU).
- [2003-2005] (sole PI) NCSA Developmental Grant: CCR040005. NCSA IA64 cluster access.

MOOC COURSES TAUGHT

- Cloud Computing Concepts (C3), MOOC on Coursera. A two-part course series. In Spring 2015: C3 Part 1 had about 84,000 registered students (Feb-Mar 2015). C3 Part 2 has about 42,000 registered students. Currently (since Spring 2016): Being offered on a continuous basis on Coursera. URL: <https://www.coursera.org/course/cloudcomputing>
- Cloud Computing Specialization on Coursera: 2015-2016. Taught both the C3 courses—above—and the Capstone course (Spring 2016). Currently (since Spring 2016): Being offered on a continuous basis on Coursera. URL: <https://www.coursera.org/specializations/cloud-computing>
- Since Fall 2016 (and every Fall semester), a section of the above courses is blended into the on-campus class CS425 (Distributed Systems) that I teach. This includes MCS-Data Sciences students at UIUC (program started Fall 2016). URL: <https://courses.engr.illinois.edu/cs425/>

GRADUATED Ph.D. STUDENTS

1. Muntasir Rahman, Defended Successfully Jun 2016, Received Degree: 2016. "Exploiting Cost-Performance Tradeoffs for Modern Cloud Systems," *First Employment: Microsoft, Redmond, USA.*
2. Imranul Hoque, Defended Successfully Aug 2013. Received Degree: 2014. "Storage and Processing Systems for Power-Law Graphs." *First Employment: VMWare, Palo Alto, USA (Currently at: Google, Mountain View).*
3. Brian Cho, Defended Successfully October, 2012. Received Degree: 2012. "Satisfying Strong Application Requirements in Data-Intensive Cloud Computing Environments." *First Employment: Samsung, South Korea, then at: Research Scientist, Seoul National University. (Currently at: Facebook).*
4. Steven Y. Ko, Defended Successfully on July 17, 2009, Received Degree: 2009. "Efficient On-Demand Operations in Dynamic Distributed Systems." *First and Current Employment: Assistant Professor, Department of Computer Science and Engineering, SUNY-Buffalo. (Deferred starting date Fall 2010, in order to be a Postdoctoral Scholar in the Computer Science Department at Princeton University, 2009-2010).*
5. Ramses V. Morales, Defended Successfully on June 25, 2009, Received Degree: 2009. "Design of Availability-Dependent Distributed Services in Large-Scale Uncooperative Settings." *First Employment: Postdoctoral Scholar, Xerox Labs, Webster, NY (Currently at: VMWare).*
6. Jay A. Patel, Defended Successfully on April 1, 2009, Received Degree: 2009. "Addressing Heterogeneity to Improve Scale and Performance of Distributed Systems." *First Employment: Yahoo!, Champaign (Currently at: Uber).*

CURRENT Ph.D. STUDENTS

1. Shadi Noghabi (co-advised with Roy Campbell): expected to graduate 2018.
2. Mainak Ghosh: expected to graduate 2018.
3. Le Xu: expected to graduate 2019.
4. Ahsan Shegufta: expected to graduate 2019.
5. Faria Kalim: expected to graduate 2020.
6. Beomyeol Jeon expected to graduate 2021.
7. Cong Xie (co-advised with Sanmi Koyejo) expected to graduate 2021.
8. Rui Yang: expected to graduate 2021.

SERVICE

- Associate Editor, ACM Transactions on Autonomous and Adaptive Systems (TAAS), 2012-Present.
- Associate Editor, IEEE Transactions on Cloud Computing (TCC), 2017-Present.
- PC (Co-)Chair for:
 - IEEE IC2E 2017
 - LADIS 2017
 - IEEE ICDCS 2016 (Track Chair, Cloud Computing and Datacenter Systems Track)
 - IEEE ICCAC 2016
 - ACM DeMiST 2016 (co-located with PODC 2016)
 - IEEE P2P 2014
 - ACM/IFIP/Usenix Middleware 2010
 - IEEE SASO 2010
 - ICDCS 2008 Track (Assoc. Track Chair, Wireless and Mobile Computing Track)
 - SSS 2009 (Track Chair, Cloud Computing Track)
 - StoDiS 2005
- General Chair for ACM PODC 2007.
- Workshops Co-chair for IEEE SASO 2009.
- Treasurer for ACM PODC 2006, and for ACM NOSSDAV 2007.
- Steering Committee Member for ACM PODC 2006, for ACM PODC 2007, and ACM/IFIP/Usenix Middleware (2011-2013).
- Awards Chair for ACM PODC 2008.
- Publicity Co-chair for SASO 2008.
- General and Program Chair, StoDiS workshop, December 2005; <http://www.stodis.org>.
- Co-Chair for Special Session in Conference on Evolutionary Computation (CEC), 2007.
- PC Member for:
 - 2018: Eurosys 2018, Usenix ATC 2018, IC2E 2018, ICDCS 2018 (Distributed Fault Tolerance and Dependability Track), CCGrid 2018 (Cloud Computing Track)
 - 2017: ACM SoCC 2017, ACM/IFIP/Usenix Middleware 2017, IEEE ICAC 2017, IEEE ICDCS 2017 (Distributed Operating Systems and Middleware Track), IEEE/ACM CCGrid 2017 (Mobile, Hy-

brid, and Emerging Clouds Track)

- 2016: Usenix ATC 2016, ACM SoCC 2016, IC2E 2016, ICPP 2016 (Applications Track), ICDCN 2016
- 2015: IEEE IC2E 2015, IEEE ICAC 2015, IEEE CAC 2015, IEEE ICDCS 2015 (Cloud Computing and Datacenter Systems Track), SIGCOMM DCC 2015, P2P/Edge 2015, MTAGS 2015
- 2014: IEEE ICDCS 2014 (Cloud Computing and Datacenter Systems Track), SIGCOMM DCC 2014, ACM SoCC 2014, MTAGS 2014
- 2013: ACM SOCC 2013, IEEE P2P 2013, IC2E 2013, ICDCN 2013
- 2012 (on leave until Aug): MTAGS 2012, ICDIT 2012
- 2011 (on leave from Aug): ICDCS 2011 (OS and Middleware Track), ICAC 2011, DCDV 2011
- 2010: ICDCS 2010 (OS and Middleware Track), HotDep 2010, ICDCN 2010, DCOSS 2010, IEEE SECON 2010, EDCC 2010, MTAGS 2010
- 2009: ACM/IFIP/Usenix Middleware 2009 (Main Track, and Industrial Track), ICDCS 2009 (Distributed Algorithms Track), COMSWARE 2009, ICDCN 2009, SASO 2009, IEEE SECON 2009, MTAGS 2009, Middleware Doctoral Symposium 2009
- 2008: ACM/IFIP/Usenix Middleware 2008, IEEE SASO 2008, ICDCS 2008 (Sensor Networks Track), IPTPS 2008, Usenix HotDep 2008, MiNEMA 2008, IWSOS 2008, Middleware Doctoral Symposium 2008, MTAGS
- 2007: ACM/IFIP/Usenix Middleware 2007, IEEE SASO 2007, SAHNS 2007, IWSOS 2007, ACM NOSSDAV 2007, I2CS 2007
- 2006: ICDCN 2006, IEEE MASS 2006, Usenix HotDep 2006, ACM/IFIP/IEEE Middleware 2006, IWSOS 2006
- 2005: StoDiS 2005
- Mock Thesis Committee Member, Middleware Doctoral Symposium, 2007.
- DOE Panelist: SBIR Panel, February 2011.
- NSF Panelist: March 2005, April 2007, June 2008, October 2009, March 2015.
- Reviewer for several journals (and conferences), including but not limited to: IEEE TPDS, IEEE TNSM, ACM TAAS, IEEE TDSC, Distributed Computing, ACM TOCS, ACM/IEEE TON, JPDC, IEEE TMM, IEEE Network, IEEE Comm. Letters, IEEE TMC, IEEE TSE, JSS, ComNets, AdHocNets, DISC, DSN, IPDPS.

CAMPUS COURSES TAUGHT

- CS 425 - Distributed Systems: Fall 2017, Fall 2016, Fall 2015, Fall 2014, Fall 2013, Fall 2012, Fall 2010, Fall 2007, Fall 2006, Spring 2005, Spring 2004 (CS 328).
- CS 525 - Advanced Distributed Systems: Spring 2017, Spring 2016, Spring 2015, Spring 2014, Spring 2013, Spring 2011, Spring 2010, Spring 2009, Spring 2008, Spring 2007, Spring 2006 (CS 598IG), Fall 2004 (CS 598IG), Fall 2003 (CS 497IG).
- CS 423 - Operating Systems: Fall 2005 (Undergraduate).
- CS 241 - System Programming: Fall 2008.
- CS 591FSN - Mathematical Tools and Foundations in Systems and Networking Research: Spring 2010.
- CS 591SN - New Systems and Networking Seminar: Fall 2005 - Present.

- CS 591IG - Advanced Seminar in Distributed Systems: Spring 2005 - Present.

PUBLICATION COPIES ONLINE

All publications available on DPRG website: <http://dprg.cs.uiuc.edu>

JOURNAL PUBLICATIONS (all lists in reverse chronological order)

1. S. A. Noghabi, K. Paramasivam, Y. Pan, N. Ramesh, J. Bringhurst, I. Gupta, R. H. Campbell. "Samza: Stateful Scalable Stream Processing at LinkedIn," Proc. of the Very Large Data Bases (VLDB) Endowment, vol. 10, no. 12, pp. 1634-1645, Aug. 2017. **(VLDB 2017 Conference Acceptance Rate: 18.6%)**
2. S. Verma, L. Leslie, Y. Shin, I. Gupta. "An Experimental Comparison of Partitioning Strategies in Distributed Graph Processing", Proc. of the Very Large Data Bases (VLDB) Endowment, vol. 10, no. 5, pp. 493 - 504, Jan. 2017. **(VLDB 2017 Conference Acceptance Rate: 18.6%)**
3. M. R. Rahman, L. Tseng, S. Nguyen, I. Gupta, N. Vaidya. "Characterizing and Adapting the Consistency-Latency Tradeoff in Distributed Key-value Stores", ACM Transactions on Autonomous and Adaptive Systems (TAAS), vol. 11, no. 4, article 20, Feb. 2017.
4. S. Liu, J. Ganhotra, M. R. Rahman, S. Nguyen, I. Gupta, J. Meseguer. "Quantitative Analysis of Consistency in NoSQL Key-value Stores", Leibniz Transactions on Embedded Systems (LITES) (Special Issue on Quantitative Evaluation of Systems (QEST)), vol. 4, no. 1, 2017.
5. R. Subramanyam, L. Leslie, W. Wang I. Gupta. "Idempotent Distributed Counters using a Forgetful Bloom Filter," Cluster Computing (Springer), vol. 19, no. 2, pp. 879-892, June 2016.
6. M. Ghosh, W. Wang, G. Holla, I. Gupta. "Morphus: Supporting Online Reconfigurations in Sharded NoSQL Systems," IEEE Transactions on Emerging Topics in Computing, vol. PP, issue: 99, DOI: 10.1109/TETC.2015.2498102, Nov. 2015.
7. S. Chen, K. Nahrstedt, I. Gupta. "3DTI Amphitheater: Towards 3DTI Broadcasting," ACM Transactions on Multimedia Computing (TOMM), vol. 11, no. 2s, article 47, Feb., 2015.
8. A. Verma, B. Cho, N. Zea, I. Gupta, R. Campbell. "Breaking the MapReduce Stage Barrier," Springer Journal of Cluster Computing, Special issue, pp. 191-206, vol. 6, no. 1, Mar. 2013.
9. I. Hoque, I. Gupta. "Disk Layout Techniques for Online Social Network Data", IEEE Internet Computing Special Issue on Infrastructure for Online Social Networking Systems, vol. 16. no. 3, pp. 24-36, May 2012.
10. A. I. Avetisyan, R. Campbell, I. Gupta, M. Heath, S. Ko, G. R. Ganger, M. Kozuch, D. O'Hallaron, M. Kunze, T. Kwan, K. Lai, M. Lyons, D. Milojicic, H. Y. Lee, N. K. Ming, J.-Y. Luke, H. Namgong, Y. C. Soh. "Open Cirrus: A Global Cloud Computing Testbed," IEEE Computer, pp. 35-43, vol. 43, no. 4, Apr. 2010.
11. L. Vu, I. Gupta, K. Nahrstedt. "Understanding Overlay Characteristics of a Large-scale Peer-to-Peer IPTV System," ACM Transactions on Multimedia Computing, Communications and Applications (TOMCCAP), vol. 6, no. 4, article 31, Nov. 2010.
12. J. A. Patel, H. Luo, I. Gupta, "Routing in the Frequency Domain," Wireless Networks, vol. 16, no. 2, pp. 527 - 543, Feb. 2010. DOI: 10.1007/s11276-008-0151-0.
13. V. Raman, I. Gupta. "Performance Tradeoffs Among Percolation-Based Broadcast Protocols in Wireless Sensor Networks," International Journal of Parallel, Emergent and Distributed Systems (IJPEDS) vol. 25, no. 6, pp. 509-530, Feb. 2010.
14. J. A. Patel, E. Riviere, I. Gupta, A.-M. Kermarrec. "Rappel: Exploiting Interest and Network Locality

- to Improve Fairness in Publish-Subscribe Systems”, *Computer Networks*, vol. 53, no. 13, pp. 2304-2320, Aug. 2009. DOI: 10.1016/j.comnet.2009.03.018.
15. R. V. Morales, I. Gupta. “AVCOL: Availability-Aware Information Aggregation in Large Distributed Systems under Uncollaborative Behavior”, *Computer Networks*, , vol. 53, no. 13, pp. 2360-2372, Aug. 2009. DOI: 10.1016/j.comnet.2009.03.006.
 16. R. V. Morales, I. Gupta, “AVMON: Optimal and Scalable Discovery of Consistent Availability Monitoring Overlays for Distributed Systems,” *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, vol. 20 no. 4, pp. 446-459, April, 2009.
 17. S. Ko, I. Gupta, Y. Jo. “A New Class of Nature-Inspired Algorithms for Self-Adaptive Peer-to-Peer Computing,” *ACM Transactions on Autonomous and Adaptive Systems (TAAS)*, vol. 3, no. 3, August, 2008.
 18. C. Sengul, M. J. Miller, I. Gupta, “Adaptive Probability-Based Broadcast Forwarding in Energy-Saving Sensor Networks,” *ACM Transactions on Sensor Networks (TOSN)*, vol. 4, no. 2, pp. 6:1-32, March 2008.
 19. J. Liang, I. Gupta, K. Nahrstedt, “Reliable On-Demand Management Operations for Large-scale Distributed Applications,” *ACM SIGOPS Operating Systems Review (OSR), Special Issue on Gossip-Based Networking*, vol. 41, no. 5, pp. 82-88, October 2007.
 20. R. V. Morales, S. Monnet, G. Antoniu, I. Gupta, “MOve: Design and Evaluation of A Malleable Overlay for Group-Based Applications,” *IEEE Transactions on Networks and Service Management (TNSM), Special Issue on Self-Management*, vol. 4, issue 2, pp. 107-116, September 2007.
 21. T. Pongthawornkamol, I. Gupta, “AVCast: New Approaches for Implementing Availability-Dependent Reliability for Multicast Receivers,” *IEEE Transactions on Networks and Service Management (TNSM), Special Issue on Self-Management*, vol. 4, issue 2, pp. 117-126, September 2007.
 22. S. Ko, P. Yalagandula, I. Gupta, V. Talwar, D. Milojicic, S. Iyer, “Querying Large Distributed Infrastructures,” *IEEE TCSC Newsletter*, vol. 9, no.1, 2007.
 23. I. Gupta, M. Nagda, C. F. Devaraj, “The Design of Novel Distributed Protocols from Differential Equations,” *Distributed Computing (Elsevier)*, vol. 20, no. 2, pp. 95-114, August 2007. (Note: Topmost Journal in Distributed Algorithms)
 24. D. Kostoulas, D. Psaltoulis, I. Gupta, K. Birman, A. J. Al Demers, “Active and Passive Techniques for Group Size Estimation in Large-Scale and Dynamic Distributed Systems,” *Elsevier Journal of Systems and Software*, vol. 80, no. 10, pp. 1639-1658, October 2007.
 25. A. Harris, R. Kravets, I. Gupta, “Building Trees Based On Aggregation Efficiency in Sensor Networks,” *Elsevier Journal on Ad-Hoc Networks (ADHOC)*, vol. 5, no. 8, pp. 1317-1328, November 2007.
 26. J. A. Patel, I. Gupta, “Bridging the Gap: Augmenting Centralized Systems with P2P Technologies,” *ACM SIGOPS Operating Systems Review (OSR), Special Issue on Self-Organizing Systems*, vol. 40, no. 3, pp. 14-17, July 2006.
 27. I. Gupta, A.-M. Kermarrec, A. J. Ganesh, “Efficient and Adaptive Epidemic-style Multicast Protocols,” *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, vol. 17, no. 7, pp. 593-605, July 2006.
 28. G. He, R. Zheng, I. Gupta, “A Framework for Time Indexing in Sensor Networks,” *ACM Transactions on Sensor Networks (TOSN)*, vol. 1, no. 1, pp. 101-133, August 2005.
 29. I. Gupta, K. P. Birman, R. van Renesse, “Fighting Fire with Fire: using Randomized gossip to Combat Stochastic Scalability Limits,” *Journal of Quality and Reliability Engineering International*, vol. 18, no.

3, pp. 165-184, May/June 2002.

30. I. Gupta, G. Manimaran, C. Siva Ram Murthy, "A New Strategy for Improving the Effectiveness of Resource Reclaiming Algorithms in Multiprocessor Real-time Systems," *Journal of Parallel and Distributed Computing*, vol. 60, no. 2, pp. 113-133, January 2000.

BOOKS EDITED AND BOOK CHAPTERS

1. Indranil Gupta and Jiangchuan Liu (PC Co-Chairs), Proceedings of the IEEE International Conference on Cloud Engineering, IC2E 2017, Vancouver, Canada, April 4-7, 2017, IEEE Computer Society, 2017.
2. Indranil Gupta and Yixin Diao (PC Co-chairs), Proceedings of the IEEE International Conference on Cloud and Autonomic Computing, ICCAC 2016, Augsburg, Germany, September 12-16, 2016, IEEE Computer Society, ISBN: 978-1-5090-3537-3, 2016.
3. Indranil Gupta and Roger Wattenhofer (PC Co-chairs), Proceedings of the 14th IEEE International Conference on Peer-to-Peer Computing, P2P 2014, London, United Kingdom, September 9-11, 2014, IEEE Computer Society, ISBN: 978-1-4799-6200-6, 2014.
4. I. Gupta, C. Mascolo (PC Co-Chairs), Proceedings of ACM/IFIP/USENIX 11th International Middleware Conference, Bangalore, India, November 29 - December 3, 2010, Springer-Verlag LNCS Vol. 5462, 2010.
5. I. Gupta, S. Hassas, J. Rolia, M. Jelasity, J. Sztipanovits (PC Co-Chair), "Proceedings of the 2010 Fourth IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO)," Budapest, Hungary, September 27 - October 1, 2010, IEEE Computer Society, ISBN: 978-0-7695-4232-4, 2010.
6. I. Gupta, Roger Wattenhofer (Chairs and Editors) "Proceedings of the 26th ACM Symposium on Principles of Distributed Computing (PODC 2007)," ACM Press, August 12-15, 2007, ACM Press, ISBN: 978-1-59593-616-5, 2007.
7. I. Gupta, "Coordination and Synchronization: Designing Practical Detectors for Distributed Systems," Wiley Encyclopedia of Computer Science and Engineering (Editor: Benjamin Wah), ECSE 85, Wiley Engineering, ISBN: 978-0-471-38393-2, January 2008.
8. I. Gupta, "Systematic Design of P2P Technologies for Distributed Systems," Global Data Management (eds: R. Baldoni, G. Cortese, F. Davide and A. Melpignano), IOS Press, ISBN: 1586036297, pp. 160-176, 2006.
9. I. Gupta, S. Ko, Nathanael Thompson, Mehwish Nagda, Christo F. Devaraj, R. V. Morales, J. A. Patel, "A Case for Methodology Research in Self-* Distributed Systems," Self-Star Properties in Complex Information Systems (eds: O. Babaoglu et al), Springer, Lecture Notes in Computer Science (LNCS) 3460, pp. 260-272, ISBN: 3540260099, 2005.
10. I. Gupta, G. Manimaran, and C. Siva Ram Murthy, "Primary-backup based fault-tolerant dynamic scheduling of object-based tasks in multiprocessor real-time systems," Chapter 20 in Dependable Network Computing, D.R. Avresky (editor), Kluwer Academic Publishers, MA, USA, 1999.

CONFERENCE PUBLICATIONS (Acceptance Rates around or below 20% are in bold font)

1. V. B. Krishna, M. Rausch, B. Ujcich, I. Gupta, W. Sanders. "An Energy-Efficient Distributed Protocol for Detecting Measurement Errors in Wireless Sensor Networks," Proc. IEEE Dependable Systems and Networks (DSN), 2017. (**Acceptance Rate: 49/220 = 22.27%**)

2. P. Nguyen, S. Konstanty, T. Nicholson, T. O'Brien, A. Schwartz-Duval, T. Spila, K. Nahrstedt, R. H. Campbell, I. Gupta, M. Chan, K. McHenry, N. Paquin. "4CeeD: Real-time Acquisition and Analysis Framework for Materials-related Cyber-Physical Environments," Proc. 17th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid), 2017. **(Acceptance Rate: 64/280 = 22.8%). Best Paper Award Winner at CCGrid 2017.**
3. S. A. Noghabi, S. Subramanian, P. Narayanan, S. Narayanan, G. Holla, M. Zadeh, T. Li, I. Gupta, R. Campbell. "Ambry: LinkedIn's Scalable Geo-Distributed Object Store," Proc. ACM SIGMOD, 2016. (Acceptance Rate for Industrial Track: 17/50 = 34%)
4. M. Pundir, M. Kumar, L. Leslie, I. Gupta, Roy Campbell. "Supporting On-demand Elasticity in Distributed Graph Processing," Proc. IEEE International Conference on Cloud Engineering (IC2E), 2016. **(Acceptance Rate: 16/73 = 21.9%). Best Paper Award Winner at IC2E 2016.**
5. L. Xu, B. Peng, I. Gupta. "Stela: Enabling Stream Processing Systems to Scale-in and Scale-out On-demand," Proc. IEEE International Conference on Cloud Engineering (IC2E), 2016. **(Acceptance Rate: 16/73 = 21.9%)**
6. C. Cai, S. Saeed, I. Gupta, R. Campbell, F. Le. "Phurti: Application and Network-Aware Flow Scheduling for Multi-Tenant MapReduce Clusters," Proc. IEEE International Conference on Cloud Engineering (IC2E), 2016. **(Acceptance Rate: 16/73 = 21.9%)**
7. S. Liu, P. Olveczky, M. R. Rahman, J. Ganhotra, I. Gupta, J. Meseguer. "Formal Modeling and Analysis of RAMP Transaction Systems", Proc. ACM Symposium on Applied Computing (SAC), 2016. (Acceptance Rate: 13/56 = 23%)
8. M. Pundir, L. Leslie, I. Gupta, R. Campbell. "Zorro: Zero-Cost Reactive Failure Recovery in Distributed Graph Processing," Proc. ACM Symposium on Cloud Computing (ACM SoCC), 2015. **(Acceptance Rate: 34/158 = 21.51%)**
9. R. Subramanyam, L. Leslie, W. Wang, I. Gupta. "Idempotent Distributed Counters Using a Forgetful Bloom Filter," Proc. IEEE International Conference on Cloud and Autonomic Computing (ICCAC), 2015. (Acceptance Rate: 17/50 = 34%)
10. Y. Shin, M. Ghosh, I. Gupta, Parqua: Online Reconfigurations in Virtual Ring-Based NoSQL Systems, Short Paper and Poster, Proc. IEEE International Conference on Cloud and Autonomic Computing (ICCAC), 2015. (Acceptance Rate: 29/50 = 58%)
11. S. Liu, S. Nguyen, J. Ganhotra, M. R. Rahman, I. Gupta, J. Meseguer. "Quantitative Analysis of Consistency in NoSQL Key-value Stores," 12th International Conference on Quantitative Evaluation of SysTems (QEST 2015), 2015. (Acceptance Rate: 17/42 = 40.4%) **Nominee for Best Paper Award Winner at QEST 2015.**
12. M. T. Amin, S. Li, M. R. Rahman, P. T. Seetharamu, S. Wang, T. F. Abdelzaher, I. Gupta, M. Srivatsa, R. K. Ganti, R. Ahmed, H. Le. "SocialTrove: A Self-summarizing Storage Service for Social Sensing," Proc. IEEE International Conference on Autonomic Computing (ICAC), 2015. **(Acceptance Rate: 14/69 = 20.3%) Best Paper Award Winner at ICAC 2015.**
13. M. Ghosh, W. Wang, G. Holla, I. Gupta. "Morphus: Supporting Online Reconfigurations in Sharded NoSQL Systems," Proceedings of International Conference on Autonomic Computing (ICAC), 2015. **(Acceptance Rate: 14/69 = 20.3%)**
14. A. Alkhalidi, I. Gupta, V. Raghavan, M. Ghosh. "Leveraging Metadata in NoSQL Storage Systems," Proc. IEEE International Conference on Cloud Computing (IEEE CLOUD), 2015. **(Acceptance Rate: 54/360 = 15%)**
15. M. Ghosh, I. Gupta, S. Gupta, N. Kumar. "Fast Compaction Algorithms for NoSQL Databases,"

- Proc. 34th International Conference on Distributed Computing Systems (ICDCS), 2015. (**Acceptance Rate: About 13%**)
16. H. Alkaff, I. Gupta, L. Leslie. "Cross-Layer Scheduling in Cloud Systems," Proc. International Conference on Cloud Engineering (IC2E), 2015. (Acceptance Rate: $17/63 = 26.9\%$)
 17. S. Liu, M. R. Rahman, S. Skeirik, I. Gupta, J. Meseguer. "Formal Modeling and Analysis of Cassandra in Maude," 16th International Conference on Formal Engineering Methods (ICFEM), 2014. (Acceptance Rate: About 30%)
 18. S. Li, S. Hu, S. Wang, L. Su, T. F. Abdelzaher, I. Gupta, R. Pace. "WOHA: Deadline-Aware Map-Reduce Workflow Scheduling Framework over Hadoop Cluster," Proc. 34th International Conference on Distributed Computing Systems (ICDCS), 2014. (**Acceptance Rate: 66/500+ = 13%**)
 19. W. Golab, M. R. Rahman, A. Auyoung, K. Keeton, I. Gupta. "Client-centric Benchmarking of Eventual Consistency for Cloud Storage Systems," Proc. 34th International Conference on Distributed Computing Systems (ICDCS), 2014. (**Acceptance Rate: 66/500+ = 13%**)
 20. S. Chen, K. Nahrstedt, I. Gupta. "3DTI Amphitheater: A Manageable 3DTI Environment with Hierarchical Stream Prioritization," Proc. ACM Multimedia Systems Conference (MMSys), 2014. (Acceptance Rate: $15/59 = 25\%$)
 21. I. Hoque, I. Gupta. "LFGraph: Simple and Fast Distributed Graph Analytics", Proc. ACM Symposium on Timely Results in Operating Systems (TRIOS), 2013. (Acceptance Rate: $11/19 = 60\%$)
 22. B. Cho, M. R. Rahman, T. Chajed, I. Gupta, C. Abad, N. Roberts, P. Lin. "Natjam: Design and Evaluation of Eviction Policies For Supporting Priorities and Deadlines in Mapreduce Clusters", ACM Symposium on Cloud Computing (SoCC), 2013. (**Acceptance Rate: 23/114 = 20.17%**)
 23. B. Cho, I. Gupta. "Budget-Constrained Bulk Data Transfer via Internet and Shipping Networks," Proc. 8th IEEE/ACM International Conference on Autonomic Computing (ICAC), 2011. (Acceptance Rate: $20/89 = 22.4\%$)
 24. S. Ko, I. Hoque, B. Cho, I. Gupta. "Making Cloud Intermediate Data Fault-Tolerant," Proceedings of ACM Symposium on Cloud Computing (SOCC), pp. 181-192, 2010. (**Acceptance Rate: 23/119 = 19.32%**)
 25. B. Cho, I. Gupta. "Planning Algorithms for Bulk Transfer via Internet and Shipping Networks," Proceedings of 30th International Conference on Distributed Computing Systems (ICDCS), 2010. (**Acceptance Rate: 84/585 = 14.35%**)
 26. A. Verma, N. Zea, B. Cho, I. Gupta, R. Campbell. "Breaking the MapReduce Stage Barrier," Proceedings of IEEE International Conference on Cluster Computing, 2010. (Acceptance Rate: $33/107 = 30.84\%$)
 27. L. Vu, K. Nahrstedt, S. Retika, I. Gupta. "Joint Bluetooth/Wifi Scanning Framework for Characterizing and Leveraging People Movement on University Campus," Proceedings of 13th ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWIM), 2010. (Acceptance Rate: $43/132 = 32.57\%$)
 28. H. Ahmadi, T. F. Abdelzaher, I. Gupta. "Congestion Control for Spatio-temporal Data in Cyber-physical Systems," First International Conference on Cyber-Physical Systems (ICCPS), 2010. (Acceptance Rate: $20/70 = 28.5\%$)
 29. A. Arefin, Y. Sarwar, I. Gupta, K. Nahrstedt. "Q-Tree: A Multi-Attribute Based Range Query Solution for Tele-Immersive Framework," Proceedings of International Conference on Distributed Computing Systems (ICDCS), 2009. (**Acceptance Rate: 74/455 = 16.26%**)
 30. R. Malik, C. Ramachandran, I. Gupta, K. Nahrstedt. "A Scalable and Memory-Efficient Feature Ex-

- traction Algorithm for Short 3D Video Segments," Proceedings of IMMERSCOM, 2009. (Acceptance Rate: $23/53 = 43\%$)
31. M. Montanari, R. Crepaldi, I. Gupta, R. Kravets. "Using Failure Models for Controlling Data Availability in Wireless Sensor Networks," Proceedings of IEEE Infocom Minisymposium, 2009. (Acceptance Rate: $382/1435 = 26.6\%$)
 32. R. Malik, S. Kim, X. Jin, C. Ramachandran, J. Han, I. Gupta, K. Nahrstedt. "MLR-Index: An Index Structure for Fast and Scalable Similarity Search in High Dimensions," Proceedings of 2009 Int. Conf. on Scientific and Statistical Database Management (SSDBM'09), 2009. (Acceptance Rate: $29/76 = 38.1\%$)
 33. S. Ko, P. Yalagandula, I. Gupta, V. Talwar, D. Milojevic, S. Iyer, "Moara: Flexible and Scalable Group-Based Querying System," Proceedings of ACM/IFIP/USENIX Middleware, 2008. **(Acceptance Rate: $21/117 = 17.94\%$)**
 34. S. Ko, I. Hoque, I. Gupta, "Using Tractable and Realistic Churn Models to Analyze Quiescence Behavior of Distributed Protocols," Proceedings of IEEE Symposium on Reliable Distributed Systems (SRDS), 2008. (Acceptance Rate: $28/112 = 25\%$)
 35. V. A. Korthikanti, P. Mittal, I. Gupta, "Fair K Mutual Exclusion Algorithm for Peer to Peer Systems," Proceedings of International Conference on Distributed Computing Systems (ICDCS), 2008. **(Acceptance Rate: $102/638 = 15.9\%$)**
 36. W. Wu, Z. Yang, I. Gupta, K. Nahrstedt, "Towards Multi-Site Collaboration in 3D Tele-Immersive Environments," Proceedings of International Conference on Distributed Computing Systems (ICDCS), 2008. **(Acceptance Rate: $102/638 = 15.9\%$)**
 37. I. Hou, Y. Tsai, T. Abdelzaher, I. Gupta, "AdapCode: Adaptive Network Coding for Code Updates in Wireless Sensor Networks," Proceedings of IEEE INFOCOM, pp. 2189-2197, 2008. **(Acceptance Rate: $236/1152 = 20.48\%$)**
 38. S. Ko, R. V. Morales, I. Gupta, "New Worker-Centric Scheduling Strategies for Data-Intensive Grid Applications," Proceedings of ACM/IFIP/USENIX Middleware, Springer Lecture Notes in Computer Science (LNCS) 4834, pp. 121-142, November 2007. **(Acceptance Rate = $22/107 = 20\%$)**
 39. R. V. Morales, B. Cho, I. Gupta, "AVMEM - Availability-Aware Overlays for Management Operations," Proceedings of ACM/IFIP/USENIX Middleware, Springer Lecture Notes in Computer Science (LNCS) 4834, pp. 266-286, November 2007. **(Acceptance Rate: $22/107 = 20\%$)**
 40. R. V. Morales, I. Gupta, "AVMON: Optimal and Scalable Discovery of Consistent Availability Monitoring Overlays for Distributed Systems," Proceedings of International Conference on Distributed Computing Systems (ICDCS), pp. 55-64, 2007. **(Acceptance Rate: $71/528 = 13.4\%$)**
 41. L. Vu, I. Gupta, J. Liang, K. Nahrstedt, "Measurement and Modeling of a Large-scale Overlay for Multimedia Streaming," Invited Paper Proceedings of International Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness (QShine), 2007.
 42. S. Ko, I. Gupta, Y. Jo, "Novel Mathematics-Inspired Algorithms for Self-Adaptive Peer-to-Peer Computing," Proceedings of IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO), pp. 3-12, 2007. **(Acceptance Rate: $25/120 = 20.8\%$)**
 43. J. A. Patel, H. Luo, I. Gupta, "A Cross-Layer Architecture to Exploit Multi-Channel Diversity with a Single Transceiver," Proceedings of IEEE INFOCOM Minisymposium, pp. 2261-2265, 2007. (Acceptance Rate: 25%)
 44. S. Monnet, R. V. Morales, G. Antoniu, I. Gupta, "MOVE: Design of an Application-Malleable Overlay," Proceedings of IEEE Symposium on Reliable Distributed Systems (SRDS), pp. 355-364, 2006.

(Acceptance Rate: 29%)

45. T. Pongthawornkamol, I. Gupta, "AVCast : New Approaches For Implementing Availability-Dependent Reliability for Multicast Receivers," Proceedings of IEEE Symposium on Reliable Distributed Systems (SRDS), pp. 345-354, 2006. (Acceptance Rate: 29%)
46. R. R. Choudhury, P. Kyasanur, I. Gupta, "Smart Gossip: An Adaptive Gossip-based Broadcasting Service for Sensor Networks," Proceedings of IEEE Symposium on Mobile Ad-Hoc and Sensor Systems (MASS), pp. 91-100, 2006. (Acceptance Rate: 24.48%)
47. V. Bhandari, I. Gupta, "PriorityCast: Efficient and Time-Critical Decision Making in First Responder Ad-Hoc Networks," Proceedings of IEEE Symposium on Mobile Ad-Hoc and Sensor Systems (MASS), pp. 246-255, 2006. (Acceptance Rate: 24.48%)
48. W. J. Jeon, I. Gupta, K. Nahrstedt, "QoS-aware Object Replication in Overlay Networks," Proceedings of IEEE Global Telecommunications Conference (Globecom), 2006. (Acceptance Rate: 40.2%)
49. J. A. Patel, I. Gupta, N. Contractor, "JetStream: Achieving Predictable Gossip Dissemination by Leveraging Social Network Principles," Proceedings of IEEE International Symposium on Network Computing and Applications (NCA), pp. 32-39, 2006. (Acceptance Rate: 35%)
50. M. Treaster, W. Conner, I. Gupta, K. Nahrstedt, "ContagAlert: Using Contagion Theory for Adaptive, Distributed Alert Propagation," Proceedings of IEEE International Symposium on Network Computing and Applications (NCA), pp. 126-136, 2006. (Acceptance Rate: 35%)
51. W. Conner, K. Nahrstedt, I. Gupta, "Preventing DoS attacks in peer-to-peer media streaming systems," Proceedings of Annual Multimedia Computing and Networking (MMCN), 2006. **(Acceptance Rate: 19.5%)**
52. S. Ko, I. Gupta, "Perturbation-Resistant and Overlay-Independent Resource Discovery," Proceedings of IEEE International Conference Dependable Systems and Networks (DSN), Yokohama, pp. 248-257, Japan, 2005. **(Acceptance Rate 20%)**
53. M. J. Miller, C. Sengul, I. Gupta, "Exploring the Energy-Latency Trade-off for Broadcasts in Energy-Saving Sensor Networks," Proceedings of IEEE International Conference on Distributed Computing Systems (ICDCS), pp. 17-26, 2005. **(Acceptance Rate: 14%, Track Acceptance Rate: 10%)**
54. D. Kostoulas, D. Psaltoulis, I. Gupta, K. Birman, A. J. Demers, "Decentralized Schemes for Size estimation in Large and Dynamic Groups," Proceedings of IEEE International Symposium Network Computing and Applications (NCA), Cambridge (MA), pp. 41-48, 2005. (Acceptance Rate: 23.9%)
55. C. F. Devaraj, M. Nagda, I. Gupta, "An Underlay for Sensor Networks: Localized Protocols for Maintenance and Usage," Proceedings of IEEE Conference Mobile Ad-Hoc and Sensor Systems (MASS), pp. 8-15, 2005. (Acceptance Rate: 35%)
56. J. Newell, I. Gupta, "The P2P MultiRouter: a Black Box Approach to Run-time Adaptivity for P2P DHTs," Proceedings of IEEE Conference on Collaborative Computing (CollaborateCom), 2005. (Acceptance Rate: 43%)
57. R. Zheng, G. He, I. Gupta, L. Sha, "Time Indexing in Sensor Networks," Proceedings of IEEE Mobile and Sensor Systems (MASS), pp. 274-283, October 2004. (Acceptance Rate: $52/200 = 25.5\%$)
58. I. Gupta, "On the Design of Distributed Protocols from Differential Equations," Proceedings of ACM Symposium on Principles on Distributed Computing (PODC), pp. 216-225, 2004. **(Acceptance Rate = 17.4%)**
59. A. S. Das, I. Gupta, A. Motivala, "SWIM: Scalable Weakly-consistent Infection-style process group Membership protocol," Proceedings of IEEE International Conference on Dependable Systems and Networks (DSN), pp. 303-312, June, 2002. (Acceptance Rate: 31%)

60. I. Gupta, A.-M. Kermarrec, A. J. Ganesh, "Efficient Epidemic-style Protocols for Reliable and Scalable Multicast," Proceedings of IEEE Symposium Reliable Distributed Systems (SRDS), pp. 180-189, October, 2002. (Acceptance Rate: 30%)
61. I. Gupta, K. Birman, P. Linga, A. J. Demers, R. van Renesse, "Kelips: building an Efficient and Stable P2P DHT through increased Memory and Background overhead," Proceedings of International Workshop on Peer-to-Peer Systems (IPTPS), Springer, Lecture Notes in Computer Science (LNCS) 2735, pp. 160-169, February, 2003. **(Acceptance Rate: 16.36%)**
62. I. Gupta, R. van Renesse, K. P. Birman, "Scalable Fault-tolerant Aggregation in Large Process Groups," Proceedings of IEEE International Conference on Dependable Systems and Networks (FTCS/DSN), pp. 433-442, July, 2001. (Acceptance Rate: 35.09%)
63. I. Gupta, T. D. Chandra, G. S. Goldszmidt, "On Scalable and Efficient Distributed Failure Detectors," Proceedings of ACM Symposium on Principles of Distributed Computing (PODC), pp. 170-179, August, 2001. (Acceptance Rate: 28.7%)
64. S. A. Fakhouri, G. S. Goldszmidt, I. Gupta, Michael Kalantar, John A. Pershing, "Gulf-stream - a system for Dynamic Topology Management in Multi-domain Server Farms," Proceedings of IEEE International Conference on Cluster Computing (Cluster), October 2001. (Acceptance Rate: 47.2%)
65. I. Gupta, R. van Renesse, K. P. Birman, "A Probabilistically correct Leader Election Protocol for Large Groups." Proceedings of International Symposium on Distributed Computing (DISC), Springer, Lecture Notes in Computer Science (LNCS) 1914, pp. 89-103, October, 2000. (Acceptance Rate: 23%)

PATENTS and INDUSTRIAL CONFERENCE PUBLICATIONS

- S. Ko, P. Yalagandula, I. Gupta, V. Talwar, D. Milojevic, S. Iyer, J. Purushottaman, "Data center Level Metrics Via In-network Aggregation," Proceedings of HP Annual Technical Conference (TechCon), 2007. **(Acceptance Rate: 40/1000 = 4%)**
- John Wilkes, Todd Wang, Walfredo Cirne, Brian Grant, Indranil Gupta, "Omega Names: Name Generation and Derivation," US Patent 20150006146, Jan. 2015.
Available at: <http://www.google.com/patents/US20150006146>

WORKSHOP PUBLICATIONS

1. S. B. Ahsan, I. Gupta. "The CAT Theorem and Performance of Transactional Distributed Systems," Proc. ACM PODC Workshop on Distributed Cloud Computing (DCC) (co-located with ACM PODC), 2016. (Acceptance Rate: 11/27 = 40%)
2. G. Du, I. Gupta. "New Techniques to Curtail the Tail Latency in Stream Processing Systems," Proc. ACM PODC Workshop on Distributed Cloud Computing (DCC) (co-located with ACM PODC), 2016. (Acceptance Rate: 11/27 = 40%)
3. M. R. Rahman, S. Piduri, I. Languev, R. Griffith, I. Gupta. "Software-defined Consistency Group Abstractions for Virtual Machines," Proc. ACM PODC Workshop on Distributed Cloud Computing (DCC) (co-located with ACM PODC), 2016. (Acceptance Rate: 11/27 = 40%)
4. W. Wang, L. Xu, I. Gupta. "Scale up Vs. Scale out in Cloud Storage and Graph Processing Systems," Proc. IEEE Workshop on Cloud Analytics (IWCA) (co-located with IEEE International Conference on Cloud Engineering (IC2E)), 2015.
5. F. Shaikh, F. Yao, I. Gupta, R. Campbell. "VMDedup: Memory De-duplication in Hypervisor," Proc. IEEE International Workshop on Cloud Analytics (IWCA), 2014.

6. L. Cao, , H. D. Kim, M.-H. Tsai, B. Cho, Z. Li, I. Gupta, C. Zhai, T. S. Huang. "Delta-SimRank Computing on MapReduce," Proc. 1st International Workshop on Big Data, Streams and Heterogeneous Source Mining (BigMine), 2012. (Acceptance Rate: 60%) (**Awarded Best Paper at BigMine 2012**).
7. R. Campbell, I. Gupta, M. Heath, et. al., "Open Cirrus: Cloud Computing Testbed: Federated Data Centers for Open Source Systems and Services Research," Proceedings of First Usenix Workshop on Hot Topics in Cloud Computing (HotCloud I), 2009. (Acceptance Rate: 13/40 = 32.5%)
8. S. Ko, I. Hoque, B. Cho, I. Gupta. "On Availability of Intermediate Data in Cloud Computations," Proceedings of 12th Usenix Workshop on Hot Topics in Operating Systems (HotOS XII), 2009.
9. V. Raman, I. Gupta. "Performance Tradeoffs Among Percolation-based Broadcast Protocols in Wireless Sensor Networks", Proceedings of WWASN, 2009.
10. S. Ko, I. Gupta, "Efficient On-Demand Operations in Dynamic Distributed Infrastructures," Proceedings of Workshop on Large-Scale Distributed Systems and Middleware (LADIS), 2008.
11. E. Ucan, N. Thompson, I. Gupta, "A Piggybacking Approach to Reduce Overhead in Sensor Network Gossiping," Proceedings of International Workshop on Middleware for Sensor Networks (MidSens), 2007.
12. M. J. Miller, I. Gupta, "Practical Exploitation of the Energy-Latency Tradeoff for Sensor Network Broadcast," Proceedings of IEEE Workshop on Sensor Networks and Systems for Pervasive Computing (PerSeNS), pp. 318-322, 2007. (Acceptance Rate: 28.9%)
13. A. Harris, R. Kravets, I. Gupta, "Building Trees Based On Aggregation Efficiency in Sensor Networks," Proceedings of IFIP/IEEE Annual Mediterranean Ad Hoc Networking Workshop (Med Hoc Net), June, 2006.
14. J. Liang, S. Ko, I. Gupta, K. Nahrstedt, "MON: On-demand Overlays for Distributed System Management," Proceedings of Usenix Workshop on Real Large Distributed Systems (WORLDS), 2005 (Acceptance Rate: 40%).
15. R. V. Morales, I. Gupta, "Providing Both Scale and Security through a Single Core Probabilistic Protocol," Proceedings of Workshop on Stochasticity in Distributed Systems (StoDiS), 2005. (Acceptance Rate: 34%)
16. A. S. Cheema, M. Moosa, I. Gupta, "Peer-to-peer Discovery of Computational Resources for Grid Applications," Proceedings of IEEE/ACM Workshop on Grid Computing (GRID), pp. 179-185, 2005. (**Acceptance Rate: 18.8%**)
17. C. Abad, I. Gupta, "Adding Confidentiality to Application-Level Multicast by Leveraging the Multicast Overlay," Proceedings of Fourth IEEE International Workshop on Assurance Distributed Systems and Networks (ADSN), pp. 5-11, 2005.
18. J. A. Patel, and I. Gupta, "Overhaul: an HTTP extension to combat Flash Crowds," In Proceedings of Ninth Workshop on Web Caching (WCW), Springer, Lecture Notes in Computer Science (LNCS) 3293, pp. 34-43, October 2004. (Acceptance Rate: 21/50 = 42%)
19. P. Linga, I. Gupta, Ken Birman, "A Churn-resistant Peer-to-peer Web-Caching System," Proceedings of ACM Workshop on Survivable and Self-Regenerative Systems (SSRS 03), pp. 1-10, October 2003. (Acceptance Rate: 38.4%)
20. I. Gupta, "Minimal CDMA Recoding Strategies for Power-controlled Ad-hoc Wireless Networks," Proceedings of IEEE International Workshop on Parallel and Distributed Computing issues in Wireless Networks and Mobile Computing, pp. 187, April 2001.
21. I. Gupta, Ken Birman, "Holistic Operations in Large-scale Sensor Network Systems: a Probabilistic Peer-to-peer Approach," Proceedings of International Workshop on Future Directions in Distributed

Computing (FuDiCo), Bertinoro, Springer, Lecture Notes in Computer Science (LNCS) 2584, pp. 180-185, June 2002. (Acceptance Rate: 64%).

INVITED LECTURES

Keynotes and Panels

1. Panelist at 26th International Conference on Computer Communications and Networks (ICCCN 2017). Talk title: "Intent-based Distributed Systems." Panel topic: "Cloud Scale Big Data Analytics." Aug. 1, 2017, Vancouver, Canada.
2. Keynote Speaker at CloudAsia 2017 (5th International Conference on Cloud Computing Research and Innovation, ICCCRI 2017). "Building Predictability into Cloud Distributed Systems," Apr. 12, 2017, Singapore.
3. Keynote Speaker at Fourth International Workshop on Middleware for Sensor Networks (MidSens), "Natural Wireless Sensor Networks," Dec. 1, 2009, Champaign-Urbana, IL, USA.
4. Panelist at 2nd IEEE International Workshop on Cloud Analytics (IWCA). Panel Topic: "Where're Clouds Headed in 5 years?" Mar. 12, 2015, Tempe, AZ, USA.
5. Panelist at 6th Middleware Doctoral Symposium (MDS). Panel Topic: "What's in the Cloud?" Nov. 30, 2009, Champaign-Urbana, IL, USA.
6. Panelist at Web Caching Workshop (WCW). Panel Topic: "Caching the Uncachable - An Uphill Battle Against Dynamic and Personalized Content." Sep, 30, 2003, IBM T. J. Watson Research Center, Yorktown Heights, NY, USA.

Other Presentations Outside UIUC (excluding regular conference paper presentations)

1. University of British Columbia. "Building Predictability into Cloud Distributed Systems," Spring 2017.
2. University of California-Berkeley. "Efficient And Online Reconfigurations In Sharded Databases," Spring 2016.
3. Microsoft. "Efficient And Online Reconfigurations In Sharded Databases," Spring 2016.
4. Carnegie-Mellon University. "Speedy and Efficient Distributed Graph Processing," Fall 2015.
5. University of Wisconsin-Madison. "Efficient And Online Reconfigurations In NoSQL Databases," Fall 2015.
6. University of Chicago. "Speedy and Efficient Distributed Graph Processing," Fall 2015.
7. I. Gupta, (co-authored with M. Ghosh, Y. Shin, W. Wang, G. Holla) "Efficient And Online Reconfigurations In NoSQL Databases," Proc. INFORMS Annual Meeting, Nov. 2015.
8. "Probabilistic CAP and Adaptive Key-value Stores," Invited Talk: Greater Chicago Area Systems Research Workshop (GCASR 2015), 2015.
9. "Probabilistic CAP and Timely-Adaptive Key-value Stores", JLESC Workshop, Chicago, 2014.
10. Yahoo! Inc, Sunnyvale. "Speedy Graph Processing," 2014.
11. VMWare. "Natjam: Priorities and Deadlines in Hadoop," 2013.
12. "Natjam: Design and Evaluation of Eviction Policies For Supporting Priorities and Deadlines in Mapreduce Clusters", Presented at ACM Symposium on Cloud Computing (SoCC), 2013.
13. HortonWorks. "Cloud Mice: Intermediate Data in Clouds," 2012.
14. Google (Mountain View). "Using Ephemeral and Eternal Overlays for Monitoring Distributed Systems," Jan 28, 2011.

15. Microsoft Research (Redmond). "Wizards and Fruitflies - Using Ephemeral and Eternal Overlays for Monitoring Distributed Systems," July 31, 2008.
16. University of Washington, Department of Computer Science. "Wizards and Fruitflies - Using Ephemeral and Eternal Overlays for Monitoring Distributed Systems," June 2, 2008.
17. University of Chicago, Computation Institute. "Lightweight Monitoring Techniques for Large-Scale Distributed Systems," May 22, 2008.
18. Princeton University, Department of Computer Science. "Wizards and Fruitflies - Using Ephemeral and Eternal Overlays for Monitoring Distributed Systems," May 6, 2008.
19. Georgia Institute of Technology, College of Computing (CERCS). "Wizards and Fruitflies - Using Ephemeral and Eternal Overlays for Monitoring Distributed Systems," February 6, 2008.
20. University of Michigan at Ann-Arbor, Department of Computer Science and Engineering. "Wizards and Fruitflies - Using Ephemeral and Eternal Overlays for Monitoring Distributed Systems," January 28, 2008.
21. University of Texas at Austin, Department of Computer Science. "Wizards and Fruitflies - Using Ephemeral and Eternal Overlays for Monitoring Distributed Systems," November 9, 2007.
22. Purdue University, Department of Computer Science. "Wizards and Fruitflies - Using Ephemeral and Eternal Overlays for Monitoring Distributed Systems," October 22, 2007.
23. University of Toronto, Department of Computer Science. "Local Actions for Global Predicates in Distributed Systems," November 17, 2006.
24. Microsoft Research, Silicon Valley Center. "Systematic Design of Distributed Protocols - From methodologies to Systems," December 11, 2005.

Within UIUC

1. Computational Science and Engineering Seminar Series, "The NoSQL Revolution will Be Powered by Impossibilities", Fall 2015.
2. Various panels as chair of the Systems and Networking Area, 2014-Present.
3. Department of Computer Science, "How to Write a Conference Paper," 2013.
4. Department of Computer Science, Panel on "Industry Internships" Spring 2010.
5. Department of Computer Science, CS598LRS Course for Ph.D. students "Improving Your Research Skills" (organized by Lui Sha). Gave Special Lecture on "How do I start building a research career?" Spring 2007.
6. Department of Computer Science Colloquium, UIUC, "Is there a Tipping Point for Distributed Systems?" Academic year 2006/07.
7. Symposium on Understanding Complex Systems, UIUC, "Fighting Fire with Fire: using Probabilistic techniques to build Stress-resistant Networked Computer systems," May 17-20, 2004.
8. Department of Computer Science Colloquium, UIUC, "Fighting Fire with Fire: using Probabilistic techniques to build Stress-resistant Networked Computer systems," Academic year 2003/04.

DEPARTMENTAL, COLLEGE AND CAMPUS SERVICE

- [2015-16] Chair, Engineering-IT Governance and Executive Advisory Committee (Instituted by Dean Andreas Cangellaris), College of Engineering. This committee oversees all operations of, and provides suggestions on, all operations and organization of the Engineering-IT organization.
- [2016-Present]: At-large member, Engineering IT Governance Committee.

- [2017-18]: Student Awards Committee, CS Department.
- [2016-17]: Faculty Recruiting Committee, CS Department.
- [Spring 2014, Spring 2015] Chair, Education IT Committee (Instituted by Dean Andreas Cangellaris), College of Engineering. This committee's final report in Spring 2014 was used by Engineering-IT to create new projects aimed at vastly improving the IT capabilities in the College of Engineering.
- [2015] Member, IT Strategy Alignment Group (Instituted by Dean Andreas Cangellaris), College of Engineering.
- [2014-2016] Chair, Systems and Networking Area, Dept. of Computer Science.
- [2015-16] Graduate Admissions (FAA) Committee.
- [2014-2015] Member, IT Governance Committee (Instituted by Dean Andreas Cangellaris), College of Engineering.
- [2014] Member, IT Governance Public Engagement (Campus Level).
- [2012-2014] Faculty Senate Member, University of Illinois.
- [2013-2014] Faculty Recruiting Committee, Department of Computer Science.
- [2013-2014] Faculty Recruiting Committee, Department of Electrical and Computer Engineering.
- [2013] ITI Research Program Manager Recruiting Committee.
- [2012-2015] Campus Google Fellowship Review Committee.
- [2012-2013] Graduate Admissions (FAA) Committee.
- [2009-2011] Chair, Student Awards Committee, Department of Computer Science, UIUC.
- [2009-2011, 2012-2014] Computer Science Advisory Committee, UIUC.
- [2009-2011] College of Engineering Awards Committee, UIUC.
- [2004-2011] Student Awards Committee, Department of Computer Science, UIUC.
- [2006-2011] Grad Study Committee, Department of Computer Science, UIUC.
- [2004-Present] Department of Computer Science: Undergraduate Student Advisor.
- [2004-Present] Department of Computer Science: Graduate Student Advisor.
- [2003-Present] Department of Computer Science: Qualifying Exam Committees in "Systems and Networking" area.
- [Spring 2008] Two-Member Committee for 2007-08 Annual Evaluation of Systems and Networking Graduate Students.
- [2006] Systems and Networking Distinguished Graduate Students Committee.
- [Fall 2007] Co-Organizer (with Klara Nahrstedt), TGIF lunch.
- [2003-Present] Prelim and Defense Committees for several Ph.D. students.

SUPERVISION OF MASTER OF SCIENCE STUDENTS

1. Shiv Verma, "An experimental comparison of partitioning strategies in distributed graph processing," MS Thesis, 2017. Next: Microsoft.
2. Luke Leslie, "Approximate failure recovery in distributed graph processing systems", MS Thesis, 2016. Next: Google.
3. Guangxiang Du, "New techniques to lower the tail latency in stream processing systems", MS The-

sis, 2016. Next: Google.

4. Le Xu, 2015, "Stela: On-demand Elasticity in Distributed Data Stream Processing Systems." Next: PhD student at UIUC. **Kuck Best MS Thesis Award Winner 2015.**
5. Boyang Jerry Peng, 2015, "Elasticity and Resource Aware Scheduling in Distributed Data Stream Processing Systems." Next: Yahoo!.
6. Rajath Subramanyam, 2015, "Idempotent distributed counters using a Forgetful Bloom Filter." Next: Datos IO.
7. Mayank Pundir, 2015, "Zorro: Zero-Cost Reactive Failure Recovery in Distributed Graph Processing." Next: Facebook.
8. Son Nguyen, 2015, "Adaptive control for availability and consistency in distributed key-values stores." Next: Jump Trading.
9. Ala' Alkhalidi, 2014, "Leveraging Metadata in NoSQL Storage Systems." Next Employment: DataS-tax.
10. Hilfi Alkaff, 2014, "Cross-layer scheduling in cloud computing systems." Next: Startup.
11. Simon Krueger, 2011, "Engineering and evaluating bulk data transfer planning over wide area networks." (Next: Microsoft.)
12. Ercan Ucan, 2007, "Scheduling of multi-stream gossip systems." First Employment: NVIDIA.
13. Charles Yang, 2006, "Deployable Techniques to Enable Cooperative Distribution of Web Content." Next: Yahoo!, then Twitter. Currently: Google
14. Thadpong Pongthawornkamol, 2006, "AVCast : New Approaches For Implementing Availability-Dependent Reliability for Multicast Receivers." First Position Afterwards: A Ph.D. student in UIUC CS department. Next: Google. **Kuck Best MS Thesis Award Winner 2006.**
15. Ramses V. Morales, 2005, "Untraceability and Malleability in P2P Overlays." First Position Afterwards: A Ph.D. student with Indranil Gupta.
16. (5 year BS/MS Thesis) Muhammad Moosa, 2005, "Efficient Mutual Exclusion in Peer-to-peer Systems." First Employment: Motorola.
17. Dimitrios Psaltoulis, 2005, "Active Algorithms for Group Size Estimation in Peer-to-peer Systems and Wireless Sensor Networks." First Employment: McKinsey and Co.
18. Yookyung Jo, 2005, "Designing Practical Distributed Systems from Sequence Equation Models." First Position Afterwards: Ph.D. student at Cornell (Computer Science Department).
19. (5 year BS/MS Thesis) Adeep Singh Cheema, 2005, "Structured Naming and Peer-to-Peer Discovery of Resources in Grid Applications." First Employment: Microsoft.
20. Kanwar Singh, 2004, "A Study of Membership Maintenance Protocols for Groups in Sensor Networks."
21. (co-supervised with Feniosky Pena-Mora of CEE Department at UIUC) Dionysios Kostoulas, 2005, "Distributed Reputation-Based Mechanisms for Trust Propagation in Large Groups." First Employment: Intrasoft International.
22. (co-supervised with Gul Agha) Mahvesh Nagda, 2004, "DiffGen: A Toolkit for generating Distributed Protocols from Differential Equations." First Employment: Sandia National Labs.

SOFTWARE

Links to all available at one of the following two URLs: <http://dprg.cs.uiuc.edu/downloads/> or <http://dprg.cs.uiuc.edu/research?action=section§ion=Projects>

- System Demos available on Youtube channel: <http://bit.do/dprgdemos>

(actual channel URL: <https://www.youtube.com/channel/UC4c11eEVRVjbXE2brjuAetg>)

- (Available for direct download or use) Morphus, LFGGraph, Hadoop without Barriers, Wasef, ISS (Intermediate Storage System) for Hadoop, MON Monitoring Service for PlanetLab, PPLive Measurement Traces, PPLive crawler code, peerCounter Monitoring Software.
- (Available via email only, to track users) DiffGen, Folklore Distributed File System, Overhaul Apache Web Server and Client, AVMON Monitoring Software, Moara Monitoring Software, and others.
- Educational (Available for direct download): DSI (Distributed Systems Infrastructure), CS425 Machine Programming Assignments for 3-Stage Building of a P2P System.

NEWS ARTICLES ABOUT MY WORK

- [2016] EdSurge Article (Antoinette Siu), Aug 17, 2016, about public clouds, featuring quotes. "Google Offers Free Cloud Access to Colleges, Plays Catch Up to Amazon, Microsoft."
URL: <https://www.edsurge.com/news/2016-08-17-google-offers-free-cloud-access-to-colleges-plays-catch-up-to-amazon-microsoft>
- [2016] Click Magazine Article. "Harnessing the power of the Data Revolution," 2016. vol 1. See pages 12-18.
URL: http://www.cs.uiuc.edu/sites/default/files/newsletters/Click_2016_Vol-1.pdf
- [2015] HP Enterprise Article, Issue No. 7, Fall 2015, about public clouds, featuring quotes, "Choose Your Own Cloud Formation," 2015.
URL: <https://www.hpematter.com/issue-no-7-fall-2015/choose-your-own-cloud-formation>
- [2015] A blog wrote about our IC2E 2015 cross-layer scheduling paper.
URL: <http://blog.acolyer.org/2015/04/15/cross-layer-scheduling-in-cloud-systems/>
- [2014] Chronicle of Higher Education Article (Avi Wolfman-Arent). "How Close is too Close? Industry Courts Computer Scholars," Aug 11, 2014.
URL: <http://chronicle.com/article/How-Close-Is-Too-Close-/148301/>
- [2012] Engineers OnStage Interview by Ravi Sathyam and David Albrecht.
URL: <http://rnd.io/engineers.onstage/20120329-indranil-gupta-on-distributed-systems>
- [2010] Article on Academy of Entrepreneurial Leadership Fellowship. "Entrepreneurial-Focused Course Seeks to Expand on UI-Led Revolutions in Distributed Computing."
URL: <http://cs.illinois.edu/news/2010/Feb22-3>
- [2008] (Articles on Cloud Computing Testbed)
 - National Science Foundation (NSF): "NSF Announces Partnership with Industry, Academia to Further Explore Data-Intensive Computing."
URL: http://www.nsf.gov/news/news_summ.jsp?cntn_id=111984&org=NSF&from=news
 - Washington Post: "HP, Yahoo, Intel Launch Cloud Computing Test Bed."
URL: <http://www.washingtonpost.com/wp-dyn/content/article/2008/07/29/AR2008072901263.html>
 - Reuters: "HP, Intel and Yahoo study ways to make Web a utility."
URL: <http://uk.reuters.com/article/idUKN2932942320080729>
 - BBC: "HP, Intel, Yahoo in cloud tie-up."
URL: <http://news.bbc.co.uk/2/hi/technology/7531352.stm>

- New York Times: "Yahoo, Intel and HP Form Cloud Computing Labs."
URL: http://www.nytimes.com/idg/IDG_852573C4006938800025749500529A63.html?ref=technology
- [2007] New York Resident: "In disaster aid, scientists look to bugs to help rescuers keep in touch" (Brandom Keim). URL: http://www.resident.com/issue_2007_07_16/resident/pages/65.html
- [2006] Above article also appeared in the Columbia News Service by the Columbia School of Journalism. URL: <http://jscms.jrn.columbia.edu/cns/2005-03-15/keim-lifesavingbugs/>
- [2005] UI News Bureau: "Insects, viruses could hold key for better human teamwork in disasters" (Andrea Lynn). URL: <http://www.news.uiuc.edu/news/05/0301disasterresearch.html>. This article also appears in several other outlets, e.g., Medical News Today. URL: <http://www.medicalnewstoday.com/articles/20541.php>
- Articles by UIUC CS Department:
 - [Apr 10, 2015] "CS@Illinois MOOC Enrolments Soar as New Specializations Launch." URL: <http://www.cs.uiuc.edu/news/cs-illinois-mooc-enrollment-continues-soar-new-specializations-launch>
 - [Feb 22, 2010] "Entrepreneurial-focused course seeks to expand on UI-Led Revolutions in Distributed Computing." URL: <http://cs.illinois.edu/news/2010/Feb22-3>
 - [Jul 29, 2008] "Cloud Computing Initiative to Study Internet-Scale Systems." URL: <http://cs.illinois.edu/node/282>
 - [Apr 10, 2008] "Professor Indranil Gupta Receives Xerox Award for Research."
 - [Apr 17, 2006] "Computers can mimic nature and outperform themselves."
 - [Feb 1, 2006] "DCS faculty show high success level in earning prestigious CAREER award."
 - [Mar 9, 2005] "Myriad Honors, Awards, and Accolades for CS Faculty."

PREVIOUS AWARDS (AS A STUDENT)

- [1998] Ranked 3rd in the class of 1998, IIT-Chennai, India; out of about 350 students.
- [1998] Secured 9th rank in the IIT-JEE 1994 (Indian Institutes of Technology Joint Entrance Examination); out of a total of about 100,000 candidates nationwide.
- [1998] Secured ranks in other Engineering Entrance examinations in India: 6th rank in Roorkee Entrance Examination, and 5th rank in EAMCET (A.P. state in India).
- [1998] Recipient of Gold Medal in National Standard Examination in Physics, India; out of a total of about 20,000 candidates appeared.
- [1998] Recipient of the National Talent Search Examination Scholarship awarded by the National Council for Educational Research and Training, Government of India.
- [1998] Placed among the top 10 ranks in several national science talent search examinations in India.

CITIZENSHIP

U.S. Citizen.