

Pankaj Jalote

Professor, Department of Computer Science and Engineering
Indian Institute of Technology
Kanpur – 208016, India

jalote@iitk.ac.in, www.cse.iitk.ac.in/users/jalote

Fax: +91-512-259-0725/259-7586

Education

- Ph.D., Department of Computer Science, University of Illinois at Urbana-Champaign, October 1985.
- M.S. Department of Computer Science, Pennsylvania State University, University Park, October 1982.
- B.Tech. Department of Electrical Engineering, Indian Institute of Technology, Kanpur, India, May 1980.

Employment History

- 2003-2004: Visiting Researcher, Microsoft Corporation, Redmond, USA.
- 1998-2002: Head of the Department, Dept of Computer Science and Engg., IIT Kanpur.
- 1996 – 1998: Vice President (Quality), Infosys Technologies Ltd., Bangalore (on leave from IIT Kanpur).
- 1989-now: Professor (95 onwards), Assoc. Prof. (91-95), Asst. Prof. (89-91), Dept. of Comp. Sc. and Engineering; Indian Institute of Technology; Kanpur.
- 1985 – 1989: Assistant Professor; Department of Computer Science, University of Maryland, College Park;
- 1985 – 1989: Joint Appt. with UM Institute of Advanced Computer Studies (UMIACS).

Research Interests

Software Engineering (quality management, statistical process control, process improvement, resource models and optimization, software architecture), Fault-tolerant computing.

Books

1. P. Jalote, ***Software Project Management in Practice***, Addison Wesley, 2002 (*Low Priced Edition by Pearson India*, 2002, *French translation*, Sept 2002, *Chinese translation*, 2003.)
2. P. Jalote, ***CMM in Practice: Processes for executing software projects at Infosys***, Addison Wesley, 1999. (*Low Priced Edition by Pearson India*, 2000, *Chinese translation*, Sept 2002, *Korean Translation*, Sept 2002, *Japanese Translation*, Oct 2002.)
3. P. Jalote, ***An Integrated Approach to Software Engineering***, Springer, New York, *Third Edition*, 2005, *Second Edition*, 1997, *First Edition*, 1991. (*Indian Edition* published by Narosa Publishing House, New Delhi. Awarded as **best selling book in computer science** by Narosa on its silver jubilee, 2002.)
4. P. Jalote, ***Fault Tolerance in Distributed Systems***, Prentice Hall, Englewoods Cliffs, NJ, ISBN: 0-13-301367-7, 1994.

Articles in Refereed Journals

1. P. Jalote, G. Jain, "Assigning tasks in 24-hour software development model", *Journal of Systems and Software*, to appear, 2006.
2. D. Sanghi, P. Jalote, et. al. "A testbed for performance evaluation of load balancing strategies for web server systems", *Software Practice and Experience*, 2004, 34:339-353.
3. R. Jain, S. Kumar, P. Jalote, S. Biswas, "An Interactive Method for Extracting Grammar from Programs", *Software Practice and Experience*, 2004, 34:433-447.
4. P. Jalote et. al., "Timeboxing: A process model for iterative software development", *Journal of Systems and Software*, 2004, 70:117-127.
5. P. Jalote and A. Saxena, "Optimum control limits for employing statistical process control in software processes", *IEEE Transactions on Software Engineering*, Vol 28:12, pp. 1126-1134, Dec 2002.
6. P. Jalote, "Use of Metrics in High Maturity Organizations", *Software Quality Professional* (American Society for Quality), Vol 4, No. 2, March 2002.
7. P. Jalote, "The success of the SPI efforts in India", *Software Quality Professional* (American Society for Quality), Vol 3, No 2, March 2001.
8. S. Rangarajan, S. Yajnik, Pankaj Jalote: WCP - a Tool for Consistent On-Line Update of Documents in a WWW Server. *Computer Networks*, 30(1-7): 327-336 (1998)
9. D. Gupta, P. Jalote, and G. Barua, "A formal framework for on-line software replacement", *IEEE Transactions on Software Engineering*, Feb 1996.
10. G. Agarwal and P. Jalote "Coding-based replication schemes for distributed systems", *IEEE Tran. on Parallel and Distributed Systems*, Vol 6, no. 3, March 1995, pp 240-251.
11. D. Gupta and P. Jalote, "On-line software version change using state transfer between processes", *Software Practice and Experience*, Vol 23, no. 9, Sept 1993, pp 949-964.
12. S. Rangarajan, P. Jalote and S. K. Tripathi, "Capacity of voting systems", *IEEE Tran. on Software Engineering*, Vol 19, no. 7, July 1993, pp. 698-706.
13. K. Fujimura and P. Jalote, "On robustness of B-tress", *IEEE Tran. on Knowledge and Data Engg.*, Vol 5, no. 3, April 1993, pp. 530-534.
14. Y. Huang and P. Jalote, "Effect of fault tolerance on response time - analysis of the primary site approach", *IEEE Transactions on Computers*, Vol 41, no. 4, April 1992, pp 420-428.
15. P. Jalote, "Specification and testing of abstract data types", *Computer Languages*, Vol. 17, no 1, 1992, pp. 75-82.
16. J. Purtilo and P. Jalote, "An environment for developing fault tolerant software", *IEEE Transactions on Software Engg.*, Vol. 17, no. 2, Feb 1991.
17. J. Purtilo and P. Jalote, "An environment for prototyping distributed applications", *Computer Languages*, Vol. 16, no. 3/4, 1991, pp. 197-207.
18. J. C. Bolot and P. Jalote, "Functional Semantics of programs with exceptions", *Computer Languages*, Vol. 15, no. 4, 1990, pp. 251-265
19. D. Sanghi, A. U. Shankar, O. Goldsmund, and P. Jalote, "A TCP instrumentation and its use in evaluating roundtrip-time estimators", *Journal of Internetworking: Research and Experience*, Vol 1, 1990, pp. 77-99.
20. Y. Huang and P. Jalote, "Analytic models for the primary site approach to fault tolerance", *Acta Informatica*, Vol. 26, 1989, pp. 543-557.
21. P. Jalote, "Fault tolerant processes", *Distributed Computing*, Vol. 2, 1989, pp. 187-195.
22. P. Dikshit, S. K. Tripathi and P. Jalote, "Sahayog - a testbed for evaluating load distribution strategies", *Software Practice and Experience*, Vol. 19, no. 5, May 1989, pp. 411-435.
23. P. Jalote, "Testing completeness of specifications", *IEEE Transactions on Software Engineering*, Vol. 15, no. 4, May 1989, pp. 526- 531.

24. P. Jalote, "Functional refinement and nested objects for object-oriented design", *IEEE Transactions on Software Engineering*, Vol. 15, No. 3, March 1989, pp. 264-270.
25. P. Jalote, "Resilient objects in broadcast networks", *IEEE Transactions on Software Engineering*, Vol. 15, No. 1, Jan 1989, pp. 68-72.
26. P. R. Chintamaneni, P. Jalote, Y. B. Shieh, S. K. Tripathi, "On fault tolerance in manufacturing systems", *IEEE Networks*, Vol. 2, no. 3, May 1988, pp. 32-39.
27. P. Jalote, "Synthesizing implementation of abstract data types from axiomatic specifications", *Software Practice and Experience*, Vol. 17, no. 11, Nov. 1987, pp. 847-858.
28. P. Jalote and R. H. Campbell, "Atomic Actions for Fault Tolerance Using CSP", *IEEE Transactions on Software Engineering*, Vol. SE-12, no. 1, Jan 1986, pp. 59-68.

Book Chapters

- 1 P. Jalote et. al., "The Timeboxing process model for iterative software development", in *Advances in Computers*, 2004, Vol 6, pp 67-103.
- 2 P. Jalote, "Knowledge Infrastructure for Project Management", in *Managing Software Engineering Knowledge*, A. Aurum, R. Jeffery, et. al. (eds), Springer Verlag, 2004.

Articles in Refereed Conferences

1. P. Jalote, R. Munshi, Todd Probsting, Components have Test Buddies, 9th Int. SIGSOFT Symposium on Component Based Software Engineering (CBSE2006), Sweden, July 2006.
2. P. Jalote et. al., Program Partitioning – A framework for combining Static and Dynamic Analysis, 4th Int. Workshop on Dynamic Analysis (WODA2006), Shanghai, May 2006.
3. A. Gupta and P. Jalote, An Experimental Comparison of the Effectiveness of Control Flow Based Testing Approaches on Seeded Faults, Proc. 12th Intl. Conf. on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2006), Vienna, April 2006. (Proceedings as Lecture Notes in Computer Science.)
4. P. Jalote and N. Agrawal Using Defect Analysis Feedback for Improving Quality and Productivity in Iterative Software Development, *Invited paper*, 3rd Int. Conf. on Information and Communication Technology, ICICT, 2005., Cairo, Dec 2005
5. V. Sharma, P. Jalote, K. S. Trivedi, "Evaluating Performance Attributes of Layered Software Architecture", Proceedings of 8th Intl. SIGSOFT Symposium on Component-based Software Engineering (CBSE), St. Louis, May 2005.
6. A. Dubey, S.K. Aggarwal, P. Jalote, A Technique for Extracting Keyword Based Rules from a Set of Programs. Proc. 9th European Conference on Software Maintenance and Reengineering, Manchester, 2005, 217-225.
7. Vipindeep V., P. Jalote, Efficient Static Analysis With Path Pruning Using Coverage Data, Workshop on Dynamic Analysis (WODA-2005) at ICSE2005, St Louis.
8. P.Jalote, G.Jain, "Assigning tasks in 24-hour software development model", Proc. Asia Pacific Sw Engg Conference (APSEC2004), Busan, Korea, 2004.
9. P.Jalote, B. Murphy, "Reliability growth in software products", Int. Symp. on Sw Reliability (ISSRE-2004), Saint Melo, France, Oct 2004.
10. P.Jalote, B.Murphy, M.Garzia, B.Erez, "Measuring reliability of software products", Industrial track in Int. Symp. on Sw Reliability (ISSRE-2004), Saint Melo, France, Oct 2004.
11. A.Kumar, P.Jalote, D.Gupta, "Caching in Distributed Object Systems", IEEE's Int. Conf. on Distributed Computing Systems (DCS), Tokyo, Japan, 2003.

12. P. Jalote, B. Vishal, "Optimal resource allocation for the quality control process", Int. Symp. on Sw Reliability (ISSRE-2003), Denver, Colorado.
13. P. Jalote, "Lessons learned in framework-based software process improvement", Proc. 9th Asia Pacific Conference on Software Engineering, ASPEC2002, Gold Coast, Australia, 2002.
14. D. Sanghi, P. Jalote, P. Agarwal, "A testbed for evaluating load balancing strategies", First WWW/Internet conference, Portugal, Nov 2002.
15. S. Varadarajan, A. Kumar, P. Jalote, D. Gupta, "ComponentXchange: An E-exchange for software components", First WWW/Internet conference, Portugal, Nov 2002.
16. A. Kumar, P. Jalote, and D. Gupta, "Accessing CORBA objects on the web", First WWW/Internet conference, Portugal, Nov 2002.
17. D. Sanghi, P. Jalote, and P. Agarwal, "Using proximity information for load balancing in geographically distributed web server systems", Proc. First The First Eurasian Conference on Advances in Information and Communication Technology, Tehran, Oct 2002.
18. P. Jalote, S. Raghavan, M. R. Bhashyam, K. Dinesh, and S. Ramakrishna, "Quantitative quality management through defect prediction and statistical process control", 2nd World Quality Congress for Software, Japan, September 2000.
19. P. Jalote "Use of Metrics in High Maturity Software Organizations in India", Invited Paper, ISSIDec, World Computer Congress, Beijing, Aug 2000.
20. P. Jalote, "Use of Metrics in High Maturity Organizations", SEPG 2000, Seattle, Washington, 2000.
21. P. Jalote, S. Raghavan, M. R. Bhashyam, and K. Dinesh, "Managing the Transition from ISO9000 to Higher Level of the CMM", Quality Week Europe '99, Brussels, Nov 99.
22. P. Jalote "Moving from ISO to Higher levels of the CMM", Software Engineering Process Group Conference, SEPG'99, Atlanta, March, 1999.
23. P. Jalote, "Efficient ordered broadcasting in CSMA/CD networks", 18th Int. Conf. on Distributed Computing Systems, Netherlands, May 1998.
24. S. Rangarajan, S. Yajnik, and P. Jalote, "WCP - A tool for maintaining consistency of documents on the Web", 7th Int. Conf. on WWW, Brisbane, Australia, April, 1998.
25. P. Jalote and M. Haragopal, "Overcoming the NAH syndrome for inspection deployment", Int. Conf. On Software Engineering, Kyoto, Japan, April 1998.
26. D. Gupta and P. Jalote, "Increasing reliability of software through on-line update", Pacific Rim Conference on Fault Tolerant Computing Systems, Taiwan, Dec. 1997.
27. G. A. Kiran, S. Haripriya, and P. Jalote, "Effect of object orientation on maintainability of software", Int. Conf. on Software Maintenance, Bari, Italy, Oct 1997.
28. P. Jalote, "Message recovery in distributed systems", Proc. 1995 Asian Computing Science Conference, Lecture Notes in Computer Science, Vol. 1023, pp. 187-194.
29. D. Venkaiah and P. Jalote, "An integer programming approach for vote assignment in distributed systems", 14th IEEE Symp. on Reliable Distributed Systems, Sept 1995, Bad Neuenahr, Germany.
30. P. Jalote, Y. Huang, and C. Kintala, "A Framework for understanding and handling transient software failures", Proc. 2nd ISSAT Int. Conf. on Reliability and Quality in Design, Orlando, March, 1995, pp.230-236.
31. Y. R. Muralidhara and P. Jalote, "A software to aid reliability estimation", 1st Int. Conf. on Sw Testing, Rel. and Quality Assurance, New Delhi, Dec 1994, pp. 54-58.
32. P. Jalote and Y. R. Muralidhara, "A coverage based model for software reliability estimation", 1st Int. Conf. on Sw Testing, Rel. and Quality Assurance, New Delhi, Dec 1994, pp. 6-10.
33. D. Gupta and P. Jalote, "Increasing system availability by on-line software replacement", 23rd Int. Conf. On Fault Tolerant Comput. Sys, Toulouse, France, June 1993, pp. 30-35.
34. S. P. Ghatare and P. Jalote, "Efficient multicasting in point-to-point networks", Proc. Networks - 92, Decemeber 1992, Trivendrum, India, published by North Holland.

35. P. Jalote, "Dynamic reconfiguration of CSP programs for fault tolerance", 22nd Int. Conf. on Fault Tolerant Computing Systems (FTCS-22), Boston, 1992, pp. 50-56.
36. G. Agarwal and P. Jalote, "An efficient protocol for voting in distributed systems", Int. Conf. on Dist. Comput. Sys., Yokohoma, Japan, 1992, pp. 640-647.
37. P. Jalote and G. Agarwal, "Using coding to support data resiliency in distributed systems", IEEE Conf. On Data Engg., Tempe, Arizona, 1992, pp. 192-199.
38. P. Jalote, "Efficient Management of replicated data in unreliable CSMA/CD networks", Proc. of INDOLAN - 90, Madras, India, 1990, by North-Holland, pp. 13-27.
39. Y. Huang and P. Jalote, "Availability analysis of the primary site approach to fault-tolerance", Proc. of 8th. Symposium of Reliable Distributed Computing Systems, October 1989.
40. J.-C. Bolot and P. Jalote, "Formal verification of programs with exceptions", Dij. of Papers 19th Int. Symp. on Fault-Tolerant Computing, Chicago, June 1989.
41. J. Purtilo and P. Jalote, "A system for allowing multi-language versions for software fault tolerance", Dij. of Papers 19th Int. Symp. on Fault-Tolerant Computing, Chicago, June 1989.
42. J. Purtilo and P. Jalote, "An environment for prototyping distributed applications", Proc. 9th Int. Conf. on Distributed Computing Systems, Newport Beach, California, June 1989, pp. 588-594.
43. S. Ming and P. Jalote, "Fault tolerant commit protocols", 5th Int. Conf. on Data Engineering, Los Angeles, Feb. 1989, pp. 280-286..
44. P. Jalote, M. Caballero, "Automated testcase generation for data abstraction", Proc. Comsac 88, Chicago, Oct. 1988, pp. 205-210.
45. K. Fujimura and P. Jalote, "Robust search methods for B-trees", Dij. of papers 18th Int. Symp. on Fault Tolerant Computing (FTCS-18), Tokyo, Japan, June 1988, pp. 194-199.
46. M. Yap, P. Jalote and S. K. Tripathi, "Fault tolerant remote procedure call", Proceedings 8th Int. Conf. on Distributed Computing Systems, San Jose, California, June 1988, pp. 48-54.
47. P. Jalote, "Using Broadcasting for Multiprocess recovery", Proc. 6th International Conference on Distributed Computing Systems, May 1986, pp. 582-589.
48. P. Jalote and R. H. Campbell, "Atomic Actions in Concurrent Systems", Proceedings of the 5th International Conference on Distributed Computing Systems, Denver, Colorado, May 1985, 184-191.
49. P. Jalote and R. H. Campbell, "Fault Tolerance using Communicating Sequential Processes", Digest of papers, 14th International Conference on Fault-Tolerant Computing (FTCS-14), Orlando, Florida, June 1984, pp. 347-352.
50. M. D. Mickunas, P. Jalote and R. H. Campbell, "The Delay/Re-Read Protocol for Concurrency Control", Proceedings of the First International Conference on Data Engineering, Los Angeles, April 1984, pp. 307-314.
51. P. Jalote, "Specification and Testing of Abstract Data Types", Proceedings of the 7th International Computer Software and Applications Conference (COMSAC83), Chicago, Nov 1983, pp. 508-511.

Other General Publications

(Most of these articles are available on www.cse.iitk.ac.in/users/jalote.)

1. Research in IT, Times of India (Education Times), July 05.
2. What does the future hold for the IITs, Economic Times, June 30, 2005.
3. The Education Raj, Economic Times, April 18, 2005.
4. "Needed a Capability Maturity Model for Engineering Education", Eco. times, May 5, 2003

5. "Research is for geeks ... Says who?", Economic Times, June 23, 2003.
6. "Blind Leading the Blind", Economic Times, March 3, 2003 (Original article: "R&D and Technical Education")
7. "Mental Faculty", Economic Times, March 10, 2003 (Original article – "Lack of PhDs Impacting Quality of Technical Education").
8. "Faculty to the Test", Economic Times, March 24, 2003 (Original article – "Building a Performance Appraisal and Reward System for giving an Impetus to R&D in Universities").
9. "UG Curriculum – Imperatives for CSE and IITK", Directions, Nov 2000.
10. "Role of the Head", Directions (IITK Magazine), Nov 2000.
11. "Its quality that has done the trick – developing nations in Asia and Latin America want to replicate India's story", Economic Times, Oct 26, 2000.
12. "Creating Precedents and Leadership", Directions (IITK Magazine), 2000.
13. "Manpower shortages still plague the industry", Economic Times, Feb, 1998.
14. "Software industry is abetting brain drain", Economic Times, June 24, 1997.
15. "The importance of preserving IITs", Economic Times, Apr 1, 1997.
16. "Lets fight it out on their turf", Economic Times, Nov. 26, 1996.
17. "Reprogramming to upgrade", The Economic Times, May 6, 1996.
18. "Facts about software usage", The Economic Times, Feb 20, 1996.
19. "Software in India - The manpower myth", The Economic Times, April 22, 1995.
20. "Survey of Computer professionals residing abroad about taking up employment in India", Current Science, 1994.
21. "Student-Faculty Ratio - Bettering the balance", The Economic Times, Nov 8, 1993.
22. "Student-faculty ratio at IITs and its impact", Current Science, 1993. Also in Economic Times, 1993.
23. "Computer Technology in China", Communications of the CSI, 1993.

Grants and Contracts

1. "Performance analysis of software architectures", Microsoft Corporation, \$30K.
2. "Software checking through static and dynamic analysis", Microsoft, \$30K.
3. "Working with .NET", Microsoft Corporation, Seattle, USA, \$10,000, 2002.
4. "Internal Automation and Student Activities", Microsoft, Seattle, \$10,000, 2002.
5. "Microsoft technologies and .NET", Microsoft Research, Seattle, USA, 2001: \$30,000, 2003: \$30,000 (with D. Sanghi, S. Biswas, M. Agarwal, H. Karnick).
6. "Replication and performance of web servers", MHRD, 2002-2003, Rs 8 Lakhs (with Dheeraj Sanghi).
7. "A scalable architecture for servers on the Web", R&D/Consultancy project, Avaya Labs, 2001-2002, USA, \$30,000 (with D. Sanghi).
8. "Distributed objects on the Web", Sun Microsystems Equipment Grant, Amount: Appx. \$20,000 (with D. Gupta).
9. "High performance replicated systems", National Science Foundation under the Indo-US program, Amount: 15,000 + Rs. 500,000 (with S. K. Tripathi).
10. "Tools for software quality assurance and prediction", ARDB, 1996, Amount: Appx. Rs. 3.5 Lakhs (with S. K. Aggarwal).
11. "Workshop on Integrated approach for fault tolerance", Office of Naval Research, Amount: 3,000 (with S. K. Tripathi).
12. "Equipment grant", National Science Foundation, Amount: 50,000 (with Agrawala et. al.).
13. "Methodologies for real time distributed systems", Office of Naval Research, Jan 87-Jan 89, Amount: 256,000 (with Agrawala et.al.).

14. "Modeling recoverability and atomicity of actions in concurrent systems", National Science Foundation, Aug. 86-Aug 88, Amount: 87,235.

Technology Transfer

Transferred the web-service for designing quality control processes to the software engineering portal SoftwareDioxide.com. The service is based on the model developed for optimizing the quality monitoring process. The portal provides it as a free service to its members worldwide.

Patents

- U.S. Patent Number 6138152 for "Technique For Effectively Serving Information Objects Through A Communication Network", issued on 10/24/2000 (jointly with Shalini Yajnik, Sampath Rangarajan)
- US Patent filed for "Timeboxing process for Iterative Software Development"

Awards and Recognition

- Elected Fellow, Institute of Electrical and Electronics Engineers, "for contributions to software process improvement, fault tolerant computing, and software engineering education", 2003.
- Elected Fellow, Institution of Electronics and Telecommunications Engineers (IETE, India), 2002.
- Silver Jubilee Award for **Best Selling Author** by Narosa 2002 for *An Integrated Approach to Software Engineering*.
- Infosys Managerial Award, 1997-98, for spearheading the quality efforts.

Teaching and Advising

Courses Taught:

Software Engineering, Advanced topics in Software Engineering, E-Commerce, Object-Oriented Systems, Fault Tolerant Computing, Operating Systems, Computer Networks, Computer System Organization.

Students: Two Ph.D. students graduated (one working in IITK and one in IBM research, New Delhi); Four PhD students currently in different stages; about 30 Masters thesis.

Industrial Interaction

- Visiting researcher, Microsoft Corporation, Redmond, USA, 2003-2004.
- Vice President (Quality), Infosys Technologies Ltd, Bangalore, 1996-1998.
- Member, Board of Directors, CMC Ltd., New Delhi, 1999-2002.
- Member, Board of Advisors, QAI India Ltd, New Delhi, 1999 onwards.
- Member, Board of Advisors, Xavor Software Systems, Irvine, California, 1999 onwards.
- Member, Board of Advisors, ProjectbyNet, Pune, 2002 onwards.
- Member, Board of Advisors, MeriTrac, Bangalore, 2001 onwards.

- Member, Board of Advisors, Kelsar Incorporated, Montreal Canada, 2002 onwards.

Consultancy:

- Mexican companies on Software Process Improvement and CMM – Softek, Monterrey; Neoris, Monterrey; Gedas, Puebla; IBM Guadalajara; Certum, IDS, IMP in Mexico City.
- E-Runway, Boston, MA, USA, process, quality, and strategy, 2001.
- Xavor systems, Irvine, LA, USA, Software process definition and improvement, 2000.
- Satyam Computer Services Ltd., Hyderabad, CMM, 1998-1999.
- ICIL, Pune, CMM, 1998-1999.
- HCL Infosystems, NOIDA, Software Requirements Management, 1998.
- Infosys Tehnologies Ltd., Bangalore - Software quality.
- AT T Bell Labs, New Jersey - Distributed systems and web, 1997, 1998.
- AT T Bell Labs, New Jersey - Software fault tolerance, 1995.
- AT T Bell Labs, New Jersey - Fault tolerance, 1993.
- Riverrun Software, NOIDA - software metrics, 1994.
- Eurolink software, New Delhi - software standards, 1993.
- CDOT, New Delhi - Software quality assurance, 1991.
- CMC, Hyderabad - Software practices, 1990.
- Tata Consultancy Services, Bombay - Software process improvement, 1989.
- Frontier Inf. Tech., Hyderabad - Software standards, 1989.

Keynotes or Invited/Plenary Talks in Conferences/Workshops

- Pursuit of Reliability – some Issues and Challenges, Keynote in QEdge, Satyam's conference on software Reliability, Hyderabad, July 2005.
- "Lessons learned in framework-based software process improvement", Keynote talk, Asia Pacific Conference on Software Engineering, Gold Coast, Australia, Dec 2002.
- "Software Industry in India – Reflections and Lessons Learned", Mexico City, March, 2001.
- "Beyond level 5", Plenary talk, SEPG in Asia, New Delhi, Feb, 2001.
- "Use of Metrics in High Maturity Software Organizations in India", ISSIDec, Beijing, Aug 2000.
- "Why is level 5 above level 4", Plenary talk, SEPG in India, 2000, Bangalore.
- "Managing Software Quality", CSI's Annual Conference, Ahemdabad, 1998.
- "In pursuit of software quality", Int. Conf. on Sw. Engg (CONSEG), Chennai, 1997.
- "Some problems with current software engineering processes" Int. Conf. on Software Engg. (CONSEG), 1995, New Delhi.
- "Three levels of expertise for implementing software engineering practices", Workshop on in-house training, IIT Madras, 1994.
- "Software engineering models", Workshop on Software Engineering, New Delhi, CSI Delhi Chapter, 1992.

Colloquia and Seminars

Satyam Computers Ltd, Hyderabad, July 2005.

Philips Research in Philips Innovation Campus, March 2005.

IBM India Research Lab, Feb 2005.

Dept of CSE, Indian Institute of Technology, Kanpur, Feb, 2005.

University of Illinois at Urbana Champaign, 2004.

University of California, Riverside, 2003
Dept of CSE, IIT Kanpur, 2000
EPFL, Laussane, Switzerland, 2000
University of Stuttgart, Germany, 2000
ETH Zurich, Switzerland, 2000
Fraunhofer Institute, University of Maryland, College Park, 1999.
University of California, Riverside, 1998.
Indian Institute of Science, Bangalore, 1997.
University of Massachusetts, Amherst, 1992.
AT T Bell Labs, Murray Hill, New Jersey, 1992.
Bellcore Research, Homedale, New Jersey, 1992.
Department of CSE, IIT Delhi, 1991.
Supercomputer center, IISc Bangalore, 1991.
CMC Ltd, Hyderabad, 1990.
University of Newcastle upon Tyne, UK, 1989.
Tandem Computers, USA, Jan 1987.
University of Southern California, Jan 1987.
University of Keiserslaughtern, West Germany, May 1985.
University of Arizona, March 1985.
Ohio State University, Feb. 1985.
Georgia Institute of Technology, Feb. 1985.

External Training and Courses

Teachers Training Program, Monterrey Tech, Mexico, on Software Engineering, June 03.
On IT and software engineering education, Acapulco, Mexico, May 2002.
Series of 4 workshops on SPI, CMM, and implementation, Mexico City, May 2002
Software process improvement and CMM, Bosch Limited, Bangalore, 2002.
Software process improvement and CMM, ERunway, Boston and Hyderabad, 2002.
Software process improvement and CMM, UshaComm India, Calcutta, 2001.
Moving from ISO to Higher Levels of the CMM, Tutorial given in *Int. Conf. In Sw. Engg.*,
Limmeric Ireland, June 2000
From ISO to CMM, Tutorial given in Univ. of Stuttgart, June 2000
CMM in Practice, Software Industry Association, Santiago, Chile, March 2000.
Requirements management, HCL Computers, NOIDA, 1999.
Capability Maturity Model, Satyam Computers, 1998
Capability Maturity Model, Infosys Technologies, 1997.
Teaching Software Engineering, QIP course held in IIT Kanpur, 1993.
Software Engineering, Tata Consulting Services, Bombay, 1987.
Fault Tolerant Computing, Tata Consulting Services, Bombay, 1987.
Programming in the Large, Frontier Technology, Hyderabad, 1987.
Software Engineering, University College, Md, USA, 1988.

Professional Service

General Chair designate for IEEE's RE2007.
Program Chair for 13th Asia Pacific Software Engineering Conference, APSEC 2006.
Co- Program Chair, APSEC 2005.
Member Editorial Board, Int. Journal of Empirical Software Engineering, 2004 onwards.
Associate Editor, IEEE Transactions on Software Engineering, 2003 onwards.

PC Member, Int. conference on software maintenance (ICSM), 2002, 2003, 2006.
PC Member, Asia pacific software engineering conference (APSEC), 2002, 2003, 2004, 2005.
Program committee member, Int. Symp on Software Reliability Engg. (ISSRE), 2002, 2004.
Program committee member, International Conference on Software Engg. (ICSE), 1993, 1996, 2002, 2004.
PC Chair, SEPG in Asia, New Delhi, 2002.
Best paper and best practice judge, SEPG in India, 2000, 2002.
PC Member, SEPG in India, 1999, 2000, 2001.
Program committee member, Symp. on Rel. and Dist. Computing Sys., 1996.
Program committee member, Pacific Rim Conf. On Fault tolerant computing, 1995
Program committee member, Int. Conf. on Fault tolerant comput. sys. (FTCS), 1991, 1995
Program committee member, FST TCS, 1991.
Member, Editorial Board, CSI's Journal of Computer Science and Informatics, since 1990.
Program Chair, Workshop on Integrated approach to fault tolerance, Greenbelt, MD, 1989.
Session Chairman, of many conferences including, ICSEs, FTCS.
Referee for IEEE Transactions on Software Engineering, Software Practice and Experience, Information Processing Letters, IEEE Software, and many conferences including ICSE, FTCS.