

Dr. Shivkumar Kalyanaraman

Employment:

- August 2011 – *present*: **Senior Technical Staff Member (STSM)**, IBM Research – India.
 - May 2013 – May 2015: **Chief Scientist**, IBM Research – Australia, Melbourne, Australia. [on assignment from IBM Research – India]
 - January 2013 – January 2014: **Co-Director**, UBD | IBM Centre, Brunei.
- July 2009 – May 2013: **Senior Manager, Next Generation Systems & Smarter Planet Solutions**, IBM Research – India, Bangalore
- Jan 2008 – June 2009: **Manager, Next Generation Telecom Research, & Senior Researcher**, IBM Research – India, Bangalore
- 2006-December 2007: **Full Professor**, Department of Electrical Computer Systems Engineering (ECSE), Rensselaer Polytechnic Institute (RPI), Troy NY, USA.
- 2002-2007: **Deputy Director**: Center for Pervasive Computing and Networking, RPI.
- 2001-2006: **Associate Professor (with tenure)**, Department of Electrical Computer Systems Engineering (ECSE), Rensselaer Polytechnic Institute (RPI), Troy NY, USA.
- 1997-2001: **Assistant Professor**, Department of Electrical Computer Systems Engineering (ECSE), Rensselaer Polytechnic Institute (RPI), Troy NY, USA.

Education

- **B.Tech, Computer Science**, Indian Institute of Technology (IIT), Madras, INDIA [1989-1993] (*ranked All India #3 in IIT JEE, 1989, South Zone 1st*)
- **M.S., Computer and Information Sciences (CIS)**, The Ohio State University, Columbus, OH, USA [1993-1994]
- **Ph.D., Computer and Information Sciences (CIS)**, The Ohio State University, Columbus, OH, USA [1994-1997]
- **Executive M.B.A.**, Rensselaer Polytechnic Institute (RPI), Troy, NY, USA. (Specialization: *Innovation and Technological Entrepreneurship*) [2003-2005].

Selected Awards:

- **Fellow of IEEE**, January 2010
- **ACM Distinguished Scientist**, October 2010
- MIT Technology Review inaugural **TR100, 100 top young innovators for the new millennium**, 1999.

Publications & Service:

- 195 refereed papers (6400+ citations) in top journals & conferences (IEEE/ACM Trans. on Networking, SIGCOMM, MOBICOM, INFOCOM, SIGMETRICS, IMC, MOBIHOC, ICNP, IwQoS)
- 7 book chapters; 19 patents granted, 35+ patents filed
- TPC Co-chair of IEEE INFOCOM 2008, General co-chair of ACM SIGCOMM 2010
- Editorial board of IEEE/ACM Transactions of Networking
- Supervised and Graduated 17 Ph.D. students, 40+ M.S. students at RPI
- Social Entrepreneurship: Online videos of networking & wireless lectures accessed by hundreds of students & professionals worldwide

Research & Leadership Summary:

On Assignment from IBM Research – India, as Chief Scientist of IBM Research Australia, Shiv is currently responsible for the scientific agenda of IBM Research – Australia (a growing 90 person+ organization) and its linkages to business and commercial impact in areas ranging from Natural Resources, Disaster Management/Resilience, Smarter Cities, Healthcare/Life Sciences. He directly leads research in

Natural Resources (Oil & Natural Gas, Unconventionals, Agriculture) and Sustainable Development (Smarter Energy, Transportation, Cities etc), Insurance and the application of big data analytics, cloud computing, advanced modeling and new behavioral economics, wearables/mobile user interfaces and incentives for adoption. Shiv returns in May 2015 to IBM Research – India to take a technical leadership role.

In IBM Research - India, Shiv established world-class inter-disciplinary research teams on smarter planet technologies, networking and wireless topics. His team conducts research in emerging wireless technologies, high performance computing, middleware, systems and data center networking with applications to large-scale smarter planet problems (energy, transportation, weather, flooding etc). He was a principal leader of the 2010 Global technology outlook (GTO) on the Convergence of IT and Wireless Infrastructure, an effort that was instrumental in shaping IBM's \$100M R&D investments in wireless and mobile technologies. He also was part of the leadership team that established a large long-term joint research center between Universiti Brunei Darussalam and IBM (UBD | IBM Centre) in Brunei at the intersection of Smarter Planet modeling and High Performance Computing. He led the worldwide IBM execution of the UBD | IBM Centre till end of 2013.

Shiv's technical specialization is in computer networking around themes of high performance wireless networking and traffic management. In particular, he has worked on topics of congestion control, reliability, multimedia networking (including peer-to-peer multimedia systems), connectionless traffic engineering, Quality of service (QoS)/quality of experience (QoE), last-mile community wireless networks, low-cost free-space-optical networks, automated network management using online simulation, multicast, and performance analysis. His strength is inter-disciplinary collaboration. Given his focus on Smarter Energy, he is now recognized as a leader in Smarter Energy (and its "nexus" with natural resources, transportation, water, and its implications on the shifting economic landscape). Specifically Shiv has worked w/ several natural resource-intensive economies (Australia, Brunei, Middle East) and has been a participant in their early shifts towards knowledge-based and innovation-driven economies. He has an extensive network in academia, industry labs, government funded non-academic labs, economic development institutions. He is an inspirational leader and a magnet for talent.

Other Professional Activities:

- Principal investigator (or Co-PI) on over 15 Federal Grants, for a budget of over \$10 million.
- Industrial R&D projects: AT&T Labs Research, WIMAX Forum, Intel Labs, Nortel Networks, Packeteer, IBM, Qwest, Reuters, Pulsecom.
- Rensselaer School of Engineering (SoE) Research Award, 2003
- Rensselaer Faculty Early Career Award, 2001
- Ameritech Presidential Dissertation Fellowship award, The Ohio State University, 1997
- Indian Institute of Technology Merit Award, 1989
- **Invited Seminars (100+ talks):** MIT, UC Berkeley, Caltech, CMU, U Illinois Urbana Champaign (UIUC), Univ of Melbourne, NICTA, I2R (Singapore), Monash University, UNSW (Australia), RMIT, Univ. of Wisconsin, Madison, U. Mass (Amherst), Purdue, Columbia Univ., U. Penn, Ohio State University, INRIA (France), Politecnico Di Torino (Italy), KTH (Sweden), Chinese Univ. of Hong Kong (CUHK), National Univ. of Singapore (NUS), Universiti Brunei Darussalam (UBD, Brunei), Indian Inst. Of Science (Bangalore, India), I.I.T Mumbai, Tsinghua Univ (Beijing, China), Masdar Institute (UAE), UAE University.
- **Entrepreneurship activities:** co-founder of Premonitia, 2001. Funded by Lazard Freyer Ventures, Castile Ventures, Paul Severino (former CEO, Bay Networks), Marty Schoffstall (former CTO and founder, PSInet).