

Dr. BIPLAV SRIVASTAVA
Research Staff Member, IBM Master Inventor, IBM T.J. Watson Research Center
ACM Distinguished Scientist, ACM Distinguished Speaker

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Elevator Pitch

Biplav is an experienced researcher and technologist interested in enabling people to make rational decisions despite real world complexities of poor data, changing goals and limited resources by augmenting their cognitive limitations with technology. His expertise is in Artificial Intelligence, Services and Sustainability, with proven track record of many science firsts and high-impact innovation (up to \$B+) in global business environment. Biplav has received major recognitions for technical work, patents and prototypes from IBM and external community, interacted with commercial customers as well as universities and governments, represented company at standard bodies, and assisted business leaders at highest levels with technical issues.

Fields of Interest

Analytics – Planning, Rule-based Systems, Learning, Cognition, Scheduling;
 Data - Semantic Web, Open and Big Data, Data Mining, Information Extraction;
 Business Integration – Web Computing Models, Asset Reuse, Service Delivery Optimization, Business Processes;
 Industry – Water, Sustainable Transportation, Public Health, Governance, Telecommunications, Retail

Education (all degrees in Computer Science)

- Ph.D.: Arizona State University, Tempe, AZ, USA Fall 1996- Spring 2000
 Dissertation Topic: Efficient Planning by Effective Resource Reasoning
- M.S.: Arizona State University, Tempe, AZ, USA GPA:4.0/4.0 Fall 1994 - Summer 1996
- B.Tech.: Indian Institute of Technology (IIT), B.H.U., India GPA:9.06/10 Fall 1989- Summer 1993
- Micro-MBA: Management module at IBM taught by top-US MBA faculties Fall 2011 (1 week) &
Summer 2005 (6 months)

Experience Summary

2016- 2009-2016 2007-2009 2006-2007 2005-2006 2001-2005 2000-2001 1996-2000 1994-1996 1993-1994	Research Staff Member Senior Researcher Research Staff Member Research Staff Member Research Staff Member Research Staff Member Core Technology Architect, R&D Senior Staff Engineer PhD Scholar MS Student Assistant System Analyst	IBM T.J. Watson Lab, NY, USA IBM Research, New Delhi, India IBM T.J. Watson Lab, NY, USA IBM Research, New Delhi, India IBM Research, Bangalore, India IBM Research, New Delhi, India Bodha.com, Los Altos, CA, USA Philips Semiconductors (VLSI Tech.), Phoenix, USA Arizona State University, USA Arizona State University, USA TCS, New Delhi, India
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Research Experience: 22 years (Industry – IBM Research: 16; Academic – ASU: 6)
 Interleaved Development Experience: 5.5 years fulltime (Philips - 4, Bodha – 0.5, TCS: 1)

Papers

- 100+ refereed research papers in leading international journals, conferences and other forums; **published at all top forums in major fields of interest (i.e., AI, Services and Sustainability)**
- Over 2700 citations. Full listing at Google scholar web site and on request.

Patents/ Intellectual Property

1. 43 US patents have been granted; single inventor on 4
2. 20+ other US patents have been filed; many more in various stages.
3. IBM's 16th Plateau Award for Technical achievements
4. Philips/VLSI Trade secret award

Recent Apps and Tools (Created or Lead)

- Water
 - "Water Advisor, a chat based advisor to taking decisions related to water taking into account water pollution". Paper at AAAI 2018, see video available at [Youtube](#) (Sep 2017).
 - GangaWatch app for water pollution information on Google [playstore](#). See description on LinkedIn [blog](#) (Jan 2016).
 - Neer Bandhu (Water Friend) app on Google [playstore](#). See description here on LinkedIn [blog](#). (Nov 2015)
- Traffic
 - Finding travel assistance on long routes using Indian open data (2013). At: <http://travelassist.herokuapp.com/>
- Tourism
 - Bharat Khoj (Discover India) app on Google [playstore](#). See paper [here](#) at IJCAI 2016 and high-level description here in the [blog](#). (Jan 2016). Bharat Khoj, a suite of novel, standards based, online applications for promoting and hosting tourist events spanning collection of high-level events with semi-automatic attendance estimation, event dissemination and an automatic experience indicator for a visitor. See [video](#) and the [web app](#); (Sep 2014).
 - [CityConcierge app](#) ([video](#)) is intended to serve as a one-stop destination to know more about the cities one cares about. It came **runner-up** in the [CitySDK App Challenge](#), an EU funded competitive initiative and won a Euro 2000 prize. (June 2014)
- Safety
 - Mentored development of the Humsafar app by a team at Shyama Prasad Mukherjee College in New Delhi, India. See summary in a [blog](#) and other details in the [paper](#). (Nov 2016)
 - Disaster Reporter app on Google [playstore](#) for capturing and sharing information during disasters like Chennai floods. (Dec 2015)
- City
 - [CityExplorer](#) - <http://city-explorer.mybluemix.net/>, for comparing Indian cities based on open data from <http://data.gov.in> (April 2015). Paper at COMAD
- Science
 - "A Cognitive Assistant for Visualizing and Analyzing Exoplanets". Paper at AAAI 2018, see video available at [Youtube](#) (Sep 2017).

Major Awards/Honors

- 2017
 - **IBM's Outstanding Technical Achievement Award (OTAA)**, an individual award for leading Co-leading Adaptive Web Services scientific accomplishment to Outstanding level. [Individual recognition]
 - **IBM's Research Division Award** for Research contribution to cognitive recruiting dashboard. [Individual recognition]
- 2016
 - **ACM Distinguished Speaker, second term (2016-2019)**, first (2013-2016) (http://dsp.acm.org/view_lecturer.cfm?lecturer_id=4923). Offering 7 topics for public lectures. [Individual recognition]
 - **IBM's Outstanding Science Accomplishment Award** for Adaptive Web Service Composition technology for significant long-term impact with 4000+ citations, best papers; lead a major component called Synthy which has 1100+ citations, 20+ related PhDs, 7 patents; industry pilots. [Group recognition]
- 2015
 - External Industry Member of Government of India's Open Government Data Taskforce setup for implementing National Data Sharing and Accessibility Policy. Details at <http://data.gov.in> [Individual recognition]

- **IBM's Research Division Award** for Watson for Technical Support Services technology [Individual recognition]
- 2014
 - **ACM Distinguished Scientist**, for significant scientific achievements and impact, <http://www.acm.org/press-room/news-releases/2014/distinguished-2014> [Individual recognition]
 - **IBM Master Inventor, second term (2014-2017)**; first (2011-2014) – for outstanding patent activities
 - Lead a team that came **runner-up** in the **CitySDK App Challenge** (<http://dev.hel.fi/node/199>), a EU funded competitive initiative and won a 2000 Euro prize. **CityConcierge app** is meant to serve as an one-stop destination to know more about the cities one cares about using CitySDK and Open 311 based data and analytics (Details - <http://www.slideshare.net/biplavsrivastava/city-concierge-presentation10june2014>) (June 2014) [Group recognition]
 - **IBM's Outstanding Technical Achievement Award (OTAA)**, an individual award for leading Synthly web services scientific accomplishment. [Individual recognition]
 - IBM's Accomplishment Award for Cognitive solutions for improving technical support services; given when an innovation has lead to at least \$10m impact [Group recognition]
- 2013
 - **ACM Distinguished Speaker, 2013 recognition** for (2013-2016) (http://dsp.acm.org/view_lecturer.cfm?lecturer_id=4923) [Individual recognition]
 - IBM's **Science** Accomplishment Award for Web Service Composition technology called Synthly; work has 1100+ citations, 20+ PhDs in associated sub-fields, 7 patents; industry pilots
 - **IBM's Outstanding Technical Accomplishment Award** for leading for Smarter Cities work; given when a work has at least \$100m revenue and major image impact [Group recognition]
- 2012
 - **ACM Senior Member, 2012 recognition** (http://awards.acm.org/award_winners/srivastava_uk87677.cfm) [Individual recognition]
 - **IBM's Corporate Award**, the highest internal individual awards for "leadership contributions to SAP NextGen Tools and its Impact on SAP Clients"; given for multi-billion \$ impact and new industry practice. [Group recognition]
- 2011
 - **Represented IBM** at World Wide Web Consortium (W3C's) working group on Government Linked Data (GLD): www.w3.org/2011/gld/ (2011 - 2013) [Individual recognition]
 - 2011-2014: **IBM Master Inventor** – for outstanding patent activities [Individual recognition]
 - IBM's Accomplishment Award for Oracle Solution Workbench; given when an innovation has lead to at least \$10m impact [Group recognition]
- 2001-2010
 - 2008: **IBM's Outstanding Technical Accomplishment Award** for Unstructured Information Management Architecture (UIMA) ; at least \$10m impact [Group recognition]
 - 2008: **IBM's Technical Accomplishment Award** for Application Factory; at least \$10m impact [Group recognition]
 - 2008: **IBM India Top-Talent recognition** given to very select high potential individuals [Individual recognition]
 - 2007: **IBM India Top-Talent recognition** given to very select high potential individuals [Individual recognition]
 - 2006: IBM's Accomplishment Award for Global Delivery Research Initiatives; given for at least \$10m impact [Group recognition]
 - 2006: IBM's Accomplishment Award for Multi-Device Authoring Toolkit; given for at least \$10m impact [Group recognition]
 - 2005: IBM Bravo award for Transfer of MDAT to Software group [Individual recognition]
 - 2004: IBM Bravo award for Eclipse adoption by universities [Individual recognition]
- Government of India's prestigious **National Talent Search Examination Scholarship (NTSE)** for excellence in science (1987 - 1993) [Individual recognition]

Customers, Government Interaction, People Management

1. Experience in interacting with commercial customers around the world, be Fortune-500 conglomerates or leaders in particular industries like airlines, transportation, construction and IT technology. [2000-]
2. International experience in interacting with non-profits for science-based initiatives in water management (USA, India). [2015-]

3. International experience in interacting with city governments around the world including [Boston](#) (USA), Singapore, Delhi and Bangalore (India), Ho Chi Minh City (Vietnam). Sample press - http://www.boston.com/business/technology/articles/2012/06/29/ibm_gives_advice_on_how_to_fix_boston_traffic_first_get_an_app/ [2010-]
4. Rich interaction and collaboration with leading Computer Science academics in USA, Canada, Vietnam, Australia, Italy and India, as well as with industrial research labs (PARC, MSR) and government labs (India). [1996-]
5. Technical lead on major research projects for over 16 years involving group size varying from 2 to 7 members. Teams have been local as well as globally distributed. [1998-]
6. Mentor or academic advisor to many graduate students (cum professionals) within IBM and students at premier institutions in India (IITs, IISc) and abroad (specifically USA, France). [2005-]

Proficiency

- Computer Science/ AI and Data
 - Planning – classical, metric, temporal, HTN, parameter tuning, preferences; Scheduling – LP, CSP, SAT.
 - Ontology – modeling, evolution, extraction from text, semantic web services
 - Open and Big Data - linked open data, social networks, standards
 - Machine Learning – classification, clustering, parameter estimation, recommendations, association rules
- Smart Cities
 - Water – data collection from real-time sensors, crowdsourcing data collection, data fusion, correlation across modalities, randomized inspections for violations, large-scale impact analysis
 - Traffic – traffic problem, paradoxes and solution paths; journey planning and optimization, carpooling, public transportation information systems; sensing using mobile, people and other technologies
 - Airlines – customer experience with social media, optimization in airline industry
 - City Services – interplay of traffic with public safety and health, ontology, data integration
- Services
 - Processes – modeling, re-engineering, automation with rules
 - Content – harvesting, process summarization, mapping to industry maps, reuse
 - Computation – web services composition and adaptation, API ecosystem
 - Alphabet Soup: BPEL4WS, WSFL, XLANG, WSDL, UDDI; Semantic Web Services: OWL, OWL-S, SA-WSDL, WSMO/WSML; XML Query languages (XQuery, Quilt, XQL, XML-QL)
- Digital Systems/ EDA: Netlist tools, ALF format, Delay calculation
- Languages: Java, C++, C, XML/HTML, Javascript, Common Lisp, Prolog, Tcl/tk, awk/Perl, VHDL
- Tools: Eclipse; WebSphere – Integration Developer (WID), Application Server (WAS), WBI Modeler, MQSeries; Rational – Jazz, Rose, Clearcase, Proof, Scopus; VisualAge; Ontology - Protégé, Top-braid Composer
- Design: OO - UML, Booch; Waterfall; Prototyping
- Platforms: Windows XP/NT/2000, MacOS, Solaris 2.6+, HP-UX 10+

Professional Services

- Very active in organizing conference (10+) and workshop events (30+), Program Committee participation in top conferences (50+); presented 5 tutorials at top international conferences, and frequent speaker at universities and blogger on technical topics; see details at http://researcher.watson.ibm.com/researcher/view_person_subpage.php?id=911, ACM DSP talks are here: http://dsp.acm.org/view_lecturer.cfm?lecturer_id=4923
- Gives public talks frequently at conferences and universities globally; has co-taught courses at IIT-Kharagpur (2016), IIT-Madras (2015), IIT-Delhi, among others.
- Member of 3 PhD committees in USA and France; Graduate external PhD committee expert at ASU, USA; external expert on many PhD programs in India.
- Oversaw patent related issues at IBM Research-India (2011-2012) jointly; internal patent evaluator for 6+ years (since 2009).
- Running the “AI in India” Google group for 5+ years with 140+ members. Details at: <http://groups.google.com/group/ai-in-india>
- Governing Body member of IIT-BHU Alumni Association (AIBA), Delhi Chapter, since 2012.
- Member of ACM, AAAI and IEEE