

Dr. BIPLAV SRIVASTAVA

Professor, AI Institute, University of South Carolina (USC)

ACM Distinguished Scientist, AAAI Senior Member, IEEE Senior Member, AAAS Leshner Fellow (2020-21)

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TLDR: Biplav has a strong track-record of creating and using AI to solve hard business and societal problems overcoming risks, in individual and leadership capacities.

Elevator Pitch

Biplav is an experienced researcher and technologist with **expertise in Artificial Intelligence (AI), Sustainability and Services**, and proven track record of many science firsts and high-impact innovation (\$B+) in global business environment. He has received major recognitions for technical work (two books, 250+ papers), patents (75+ issued) and prototypes (20+) from peers, interacted with commercial customers as well as universities and governments, represented at standard bodies (World Wide Web Consortium, Partnership on AI), and assisted business leaders at highest levels with technical issues. He is the PI for University of South Carolina's participation in [NIST](#)'s AI Consortium (AIC). Biplav sees AI as 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. Trustworthy AI, aligned to human values and sustainable development, is the need of the hour. He is working on promoting goal-oriented, ethical, human-machine collaboration using learning and reasoning. In particular, *his group excels in building and validating prototypes with users.*

Experience Summary

Research Experience: 33 years (Industry – IBM: 20 (Research: 18, Corporate: 2); Academic – USC: 6, ASU: 7)

Interleaved Development Experience: 5.5 years fulltime (Philips - 4, Bodha - 0.5, TCS: 1)

2020-	Professor	AI Institute, University of South Carolina, Columbia, SC, USA
2026-	Adjunct Professor, Computational Medicine and Bioinformatics, Medical School	Univ. of Michigan, Ann Arbor, MI, USA
2025-2028	Faculty Affiliate, SC SmartState Center for Healthcare Quality (CHQ)	University of South Carolina, SC, USA
2025-2028 (summer)	VAIBHAV Fellowship on Personalized Yoga and AI	IIT BHU, India
2025-	Visiting Professor	IIT Roorkee, India
2021-2023 (summer)	Adjunct Professor, in support of India's VAJRA Fellowship on AI Trust	IIT Roorkee, India
2001-2020	Researcher positions as noted below	IBM Research and Corporate, US & India
2018-2020	Distinguished Data Scientist, Master Inventor	IBM Chief Analytics Office, NY, USA
	Research Staff Member, Master Inventor	
2016-2018	Senior Researcher, Master Inventor	IBM T.J. Watson Lab, NY, USA
2009-2016	Research Staff Member	IBM Research, New Delhi, India
2007-2009	Research Staff Member	IBM T.J. Watson Lab, NY, USA
2001-2007	Research Staff Member	IBM Research, Delhi & Bangalore, India
2000-2001	Core Technology Architect, R&D	Bodha.com, Los Altos, CA, USA
1996-2000	Senior Staff Engineer	Philips Semi. (VLSI Tech.), Phoenix, USA
	PhD Scholar	Arizona State University, USA
1994-1996	MS Student – Research Assistant	Arizona State University, USA
1993-1994	Assistant System Analyst	TCS, New Delhi, India

Fields of Interest / Proficiency

AI (Analytics) – Reasoning, Learning, Representation, Ethics and Trustworthiness, Constraints, Scheduling

- Reasoning – planning, scheduling, parameter tuning, preferences, satisfiability
- Machine Learning – large language models (LLMs/FMs), deep learning, adversarial attacks, bias, classification, clustering, recommendation; ML Tools: Tensorflow, Keras, PyTorch, HuggingFace, scikit-learn, interpretML, Weka

- Representation – ontology modeling, evolution, extraction from text, semantic web services

Data - Semantic Web, Open and Big Data, Provenance, Data Mining, Information Extraction, Sensors;

Business Integration – Web Computing Models, Asset Reuse, Service Delivery Optimization, Business Processes;

- Cloud Computing – APIs/REST, Web Services, Devops
- Languages: Python, Java, C++/C, Common Lisp, Prolog

Industries – Water, Sustainable Transportation, Public Health, Governance/ Elections, 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 2016, 2011 (1 week), Summer 2005 (6 months)

Intellectual Property

- Papers: 250+ refereed research papers in leading international journals and conferences; published at all top fora in major fields of interest (AI, Services and Sustainability); 8200+ citations
- Books: 2 - (1) Assessing, [Explaining, and Rating AI Systems for Trust with Applications in Finance](#), Springer Nature (pub.), ISBN: 978-3-032-21038-8, 2026; (2) [PROMISE – PROMoting AI’s Safe usage for Elections](#), Springer Nature (pub.), ISBN: 978-3031898525, 2025
- Patents: 77 US patents granted; single inventor on 4; IBM’s 21st Plateau Award for Technical achievements; Lead and worked with technical and legal teams to build patent portfolios for over a decade.

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). [2010-]
4. Rich 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/ innovation projects for over 20 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-]

Professional Service

- General Chair of 37th [International Conference on Automated Planning and Scheduling \(ICAPS 2027\)](#), Columbia, SC.
- Volunteer for the prominent pre-publication repository, Arxiv, for the cs.AI area. This role is based on invitation for technical expertise in the field [2026-].
- Prolific in organizing conferences (10+) and workshop events (30+), Program Committee participation in top AI conferences (50+); presented 9 tutorials or labs at top international conferences, speaker at universities and blogger on technical topics; Details: <https://sites.google.com/site/biplavsrivastava/talksntools>, ACM DSP talks are here: http://dsp.acm.org/view_lecturer.cfm?lecturer_id=4923
- Running the “AI in India” Google group since 2010 with 600+ members presently. Details: <http://groups.google.com/group/ai-in-india>

Major Awards, Recognitions or Honors

2020 -	• Selected and sponsored as a VAIBHAV Fellow by Department of Science and Technology, Government of India (17 selected from 216). To work with and at IIT BHU, India on AI and Yoga during 2025-2028. (Feb 2025) • IAAI/AAAI Deployed Innovation Award for “Promoting Research Collaboration with Open Data Driven Team Recommendation in Response to Call for Proposals” (Feb 2024) • AAAI 2024 Best Technical Demonstration Award for “Expressive and Flexible Simulation of Information Spread Strategies in Social Networks Using Planning” (Feb 2024) • JP Morgan Chase Faculty Research Award for ‘Automatically Generating Composable Trust Certificates for Blackbox AI Systems in Finance and Assessing their Impact on End Users’ (2023)
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	• Cisco Research Faculty Award for ‘Assessing and Rating Multi-Modal AI Services for Trust as Black Box’ (2022) • Selected and sponsored as a VAJRA Faculty by Department of Science and Technology, Government of India to work with faculties and students at IIT Roorkee, India in 2022-2023 summers on AI trust (2022) • AAAI Senior Member, recognized by Association for Advancement of Artificial Intelligence for significant contributions and service to AI community (Feb 2020) • AAAS Leshner Public Engagement Fellow, 2020-2021 cohort of the American Association for the Advancement of Science Leshner Leadership Institute for Public Engagement with Science, focusing on Artificial Intelligence (Feb 2020) IAAI/AAAI Deployed Application Award for “Clarity: Data-driven Automatic Assessment of Product Competitiveness” (Feb 2020)
2015- 2019	• AAAI 2019 SafeAI Workshop’s Best Paper Award for “Detecting Backdoor Attacks on Deep Neural Networks by Activation Clustering” (Jan 2019). • IBM Master Inventor – for outstanding patent activities (2019-2022); Earlier twice - 2011-2014, 2014-2017. • AAAI 2018 Best Demonstration Award (Feb 2018) and ICAPS 2018 Runner-up for Best Demonstration Award (June 2018). See details in “Recent Apps and Tools”. • Representing IBM at Partnership on AI’s Working Group on Fair, Transparent and Accountable AI (2018-). https://www.partnershiponai.org • IEEE Senior Member, for technical achievements (Dec 2018) • IBM’s Outstanding Technical Achievement Award (OTAA), an individual award for leading Co-leading Adaptive Web Services scientific accomplishment to Outstanding level. • IBM’s Research Division Award for Research contribution to cognitive recruiting dashboard. • 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 Synthly which has 1500+ citations, 20+ related PhDs, 7 patents; industry pilots. [Group recognition] • 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
2014 and before (select awards)	• IBM’s Research Division Award for Watson for Technical Support Services technology • ACM Distinguished Scientist, for significant scientific achievements and impact, http://www.acm.org/press-room/news-releases/2014/distinguished-2014 • 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 detailed at http://www.slideshare.net/biplaysrivastava/city-concierge-presentation10june2014. • IBM’s Outstanding Technical Achievement Award (OTAA), an individual award for leading Synthly web services scientific accomplishment. [2014] • IBM’s Accomplishment Award for Cognitive solutions for improving technical support services; given when an innovation has lead to at least \$10m impact [2014] • 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; 2012] • Represented IBM at World Wide Web Consortium (W3C’s) working group on Government Linked Data (GLD): www.w3.org/2011/gld/ (2011 - 2013) • Government of India’s prestigious National Talent Search Examination Scholarship (NTSE) for excellence in science (1987 - 1993)

Select Recent Apps and Tools (Co-Created or Led)

Language Models	GAICO : GenAI Results Comparator python package on PyPI supporting text, audio and image; downloaded 18K+ (June 2025-); paper: https://arxiv.org/abs/2508.16753 IAAI/AAAI 2026
Science	"A Cognitive Assistant for Visualizing and Analyzing Exoplanets". Paper at AAAI 2018. **Winner of AAAI 2018 Best Demonstration Award** . Video - http://ibm.biz/tyson-demo (Feb 2018).
Smart Room	"Visualizations for an Explainable Planning Agent". Paper at ICAPS 2018. **Runner-up for ICAPS 2018 Best Demonstration** . Video - https://youtu.be/ZEHxCKodEGs (June 2018).

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 - https://www.youtube.com/watch?v=z4x44sx3zA (Sep 2017). • WaterWatch app for water pollution information on Google playstore. App - https://play.google.com/store/apps/details?id=com.research.waterwatch&hl=en. Code - https://github.com/sandeep-iitr/Water-Watch • GangaWatch app for water pollution information on Google playstore. Video - https://youtu.be/MbVvVGsZoTo. See description on LinkedIn blog (Jan 2016). • Neer Bandhu (Water Friend) app on Google playstore. See description here on LinkedIn blog. (Nov 2015)
Tourism	• Bharat Khoj (Discover India) app on Google playstore. Demo paper 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)
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 2015.

Summary of Research Track Record and Its Practical Significance

In Artificial Intelligence (AI), Biplav has worked in the areas of **reasoning** (planning and scheduling), **learning** (machine and deep learning), **knowledge representation** for open and sensor data, and **trusted AI**. He is currently working on neuro-symbolic methods (Slow and Fast Reasoning in AI, CACM 2025, Nature npj 2025, AAAI 2021), trusted AI and applications of AI in collaborative assistants (**chatbots**) and **sustainability**.

In **reasoning**, Biplav's work on diverse planning was motivated by his industrial experience of applying planning in automated system management. It was the **first** in the field on how to measure plans based on distance and automatically generate a set of plans with quality constraints (e.g., dis-similarity) in the presence of incomplete or unknown preferences. It led to publications with over 2k citations in AIJ 2012, IJCAI 2009, IJCAI 2007 and a PhD thesis, and has wider applications in traffic management and security. Another fundamental work was during his PhD on teasing causal and resource reasoning in planning with RealPlan (EWSC 1999, AAAI 2000, AIJ 2001). Biplav's team has been working on understanding large language models (LLMs) and combining their strengths with symbolic methods to build general planners using neuro-symbolic architectures (CACM 2025, ICAPS 2025, ICAPS 2024, IJCAI 2024). The goal is to solve more problems in given time faster and with lesser resources.

In **learning**, Biplav is working on evaluating, using, fine-tuning, and creating large language models for reasoning tasks related to planning, ethics, and space-time (AAAI 2025, Neurips 2024, AAAI 2024). Previously, he was involved with studying adversarial attacks on AI services from training data (SafeAI 2019 Best Paper), evaluating word embeddings (RepEval 2019), rating AI services for bias (IBM R&D Jour 2019, AIES 2018), recommendation strategies for information elicitation (IUI 2018) and products (EC-Web 2002), and automatic tuning of parameters for planners (AAAI 2005). He lead a pioneering work on characterizing and predicting delays of trains in India using zero-shot learning (ITSC 2018).

In **representation**, Biplav has worked on building complex ontologies for planning (CODS-COMAD 2024, Data Science 2025, AAAI Spring Symposium – MAKE 2026) and events (AAAI WS 2014). They were constructed from design document (FSE 2019) or manually, e.g., SCRIBE for city events (AAAI WS 2014), and used them to drive semantic matching (ISWC 2005), composite service discovery (WWW2025), and explainability (AAAI 2026).

In **trusted AI**, Biplav has conducted Randomized Control Trail (RCT) tests in a large-scale business environment to study impact of AI on workforce (involving ~140m revenue and ~1000 people; July-Dec 2019) which was a joint project with MIT. He has introduced the idea of rating AI systems for bias as a third-party service, built tools and conducted experiments (2018-; TheWeb 2026, AAAI Fall Symp 2025, AI Ethics 2025), leading to a book (2026) on the topic. He is PI for University of South Carolina's participation in National Institute of Standards and Technology (NIST)'s Artificial Intelligence Consortium (AIC) (2024-).

Since 2016, Biplav has been exploring the role of reasoning (planning) and learning for human-agent dialogs in individual and group settings. Use cases are (a) explaining large datasets and their insights to people, and (b) embodiment agents

(environment or room) that can track the discussion and intervene to provide decision support to a group of people. He lead building of a tool to understand the role of face mask in controlling COVID19 in US which received significant press.

[Impact]

- Work on rating AI led to the book, Assessing, [Explaining, and Rating AI Systems for Trust with Applications in Finance](#), Springer Nature (pub.), ISBN: 978-3-032-21038-8, 2026
- Work on RCT in business has led to multi-million dollars impact on business, work; on mask has been cited in global press
- Published a significant paper on Chatbots during COVID-19 which appears in Cell Patterns, Aug 2021.
- Work on chatbot generator and conversation design is being used in business and offered to IBM clients. Innovations for chatbots with reasoning and learning in CHIA dialog platform has been delivered to Watson product group (2018). Won awards for chatbots for *space* (AAAI 2018 best demo award), *room* (ICAPS 2018 best demo runner-up).
- Application of planning techniques in Services has lead to many science (~2000 citations) and industry firsts (O-level Research accomplishment); see under Services.
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In Sustainability, Biplav has worked on decision-support methods and tools for elections (governance), water, traffic, tourism and open data. Full details are at: <https://sites.google.com/site/biplavsrivastava/research-1/intelligent-systems>

Since 2021, created and led research on positive use of AI in elections working closely with colleagues in security, journalism and political science. As part of this, organized workshops at top AI venues, built tools, collated and shared data, wrote papers (AAAI 2025), and edited a book - [PROMISE – PROMoting AI's Safe usage for Elections](#), ISBN: 978-3031898525, 2025. Details: <https://sites.google.com/site/biplavsrivastava/research-1/ai-and-elections>.

In **water**, between 2015-2018, led the BlueWater initiative to make water pollution data and their insights accessible and usable to stakeholders. Details: <https://sites.google.com/site/biplavsrivastava/research-1/bluewater>. See Water Advisor tool (Youtube - <https://www.youtube.com/watch?v=z4x44sx3zA>), tutorial at AAAI 2017, mobile apps (Water Watch), and multi-sensor data collection for managing water-centered tourist events with millions of people.

In **traffic**, Biplav has worked on formulating the underpinnings of traffic problem (ITS 2011) and carpooling (ITS 2012), and novel sensing techniques that can address complexities confronting developing world (ITS 2013b, ITSC 2011). He **pioneered** building of useful journey recommendation tools without deep sensors by using available static public transportation data and cross-purposing existing dynamic data in new ways (ITSC 2012). He has worked with government agencies in USA (Boston – ITS 2013) and Asia (Vietnam, India, Singapore) on these problems and given two tutorials at major AI conferences (Tutorial-IJCAI 2013, Tutorial-AAAI 2012). He has looked to accelerate public decision-making in the presence of uncertainty (UAI 2013, AAAIWS14) and since 2025, has been working with state agencies in South Carolina (<https://ai4society.github.io/projects/traffic-page/index.html>, AAAI 2025).

In Services, Biplav has explored AI planning ideas in the emerging area of automated system management (i.e., agentic AI, web services composition, autonomic computing) and which have created both scientific and business impact.

He lead the **first** end-to-end automated web service composition approach, called **Synthy**, that composes SOA-compliant components (Web Services) to create a new composite web service while meeting the desired functional and non-functional requirements (JoWS 2005, WWW 2005, AAAI 2006, ISWC 2005, Compute 2008, ICAPSW 2003). Synthy is as much significant for tackling various aspects of web service composition as for applying different facets of computer science – AI Planning, Web Semantics, Distributed Computing and Optimization. Details: <https://sites.google.com/site/biplavsrivastava/research-1/synthy-web-services>. Another **first** in web services is Semaplan, an approach which Biplav co-invented to represent and match services using semantics and planning techniques (ICWS 2006) that was implemented and made available as a major feature in IBM's software offering. In autonomic computing, Biplav articulated the role of declarative methods like planning in automated control, incorporated a Java-based family of planners in agent toolkit (ABLE) and demonstrated their real-world usage with selective automation (ICAPS 2005, ICAC 2004). *He is leveraging these in current research to improve security issues with agentic AI systems.*

In **business processes**, Biplav co-invented methods to increase the efficiency of business consultants working on packaged application projects (e.g., SAP and Oracle). Specifically, the new techniques were on how to harvest business process documents captured in prior projects, create models and then develop model-based cloud-enabled tools to reuse and organize content. He created additional technologies to learn models from enterprise documents, use APQC's Process Classification Framework to align vendor's offerings and compare business processes & their hierarchies. This not only pushed BPM (business process management) science (SCC 2009, SCC2010a, SCC2010b, SAC2010) but also lead to multi-billion dollar business impact in IBM's consulting practices. He also conceived an approach to model assets containing

software and related artifacts using ontologies that can promote large-scale software component reuse using a repository enabling higher precision and recall, and also to extract such an ontology from software design artifacts [SWBook 2008, SCC 2008, SCC 2007].

[Impact]

- . The packaged application technologies have been adopted in mainstream business services after piloting with customers and **lead to multi-billion USD impact. Biplav was recognized with IBM's highest award - Corporate award**, and work lead to 5 papers, 14 patents/applications.
- . As technical lead on Synthy web services approach, saw the built tool piloted with a large Indian telecommunication customer and lead to a rich IP pool. Work lead to 14 papers, 6 patents, ~1100 citations and influenced over 20 PhD over the last 10 years. **The work was awarded IBM Research's O-level science accomplishment for test-of-time impact in 2017.**

Summary of Significant Tools Built

Built innovative systems for decision support in domains as diverse as governance (city comparison - IJCAI 2016, election chatbots - AI Magazine 2023), astronomy (**AAAI 2018 best demo award**), water (AAAI 2018), smart room (**ICAPS 2018 demo runner up**, IJCAI 2018), career planning (commercial product), market intelligence (**AAAI 2020 deployed AI award**), dialogs for information retrieval (ICAPS 2021), fairness and trust assessment (AAAI 2021, WWW 2026), computer games (AAAI 2022), generalized planning (IJCAI 2023), information spread in opinion networks (**AAAI 2024 best demo award**), transportation, set recommendation (teaming (**AAAI 2024 deployed AI award**), meals), generative AI analysis (AAAI 2026), and health.