Vijay Saraswat

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Current position

Research Staff Member, IBM TJ Watson Research Center

Areas of specialization

Artificial Intelligence – Natural Language Understanding, Logic, Knowledge Representation and Reasoning, Machine Learning. *From Linguistics to Knowledge.*
Programming Languages
Distributed Systems

Appointments held

2003-	*Research Staff Member*, IBM TJ Watson (variously, Chief Scientist in different capacities)
2002-2003	*Professor* of Computer Science and Engineering, Penn State University
2001-2002	*Vice President*, Engineering, Kirusa, Inc.
2000-2001	*Director* and *Chief Technology Officer*, Vayusphere, Inc.
1996-2000	*Member, Research Staff*; *District Manager*; *Technology Consultant* AT&T Labs
1987-1996	*Research Staff Member*, Xerox PARC
1986-1987	*Artificial Intelligence Scientist*, Carnegie Group, Inc.

Education

1989	PHD in Computer Science, Carnegie-Mellon University
1985	M S in Computer Science, Carnegie-Mellon University
1982	B TECH in Electrical Engineering, I.I.T. Kanpur

Awards

2015	ACM SIGPLAN OOPSLA Ten-year "Most Influential Paper" award
2013	IBM Outstanding Scientific Accomplishment for X10
2013	IBM Outstanding Technical Achievement for contribution to PERCS
2007/8/9/12	HPC Challenge Awards
2004	"Most influential paper in 20 years" award from Association of Logic Programming
1994	Xerox PARC Excellence in Research Award
1989	ACM Doctoral Dissertation Award
1982	IITK Ratan Swaroop Gold Medal

Research Grants

2013-14	Air Force Research Lab, "Resilient X10"
2012-2015	Department of Energy X-Stack award "X10"
1994-1995	NASA "Testing of hybrid and reactive systems"
1994-1996	Office of Naval Research "Timed Concurrent Constraint Programming"
1996-1997	National Science Foundation "Collaborative Learning Spaces"
1995-1997	DARPA "Articulate Spaces"

Publications: 100+ papers, 9000+ citations, 15+ patents

Selected articles

2017	Cheng, J., Reddy, S., Saraswat, V., Lapata, M. "Learning Structured Natural Language Representations for Semantic Parsing", *ACL*.
2017	Saparov, A., Saraswat, V., Mitchell, T. "Probabilistic Generative Grammar for Semantic Parsing", *CoNNL*.
2016	Loreggia, A., Samulowitz, H., Malitsky, Y., Saraswat, V. "Deep Learning for Algorithm Portfolios", *AAAAI*.
2016	Tardieu, O., Herta, B., Cunningham, D., Grove, D., Kambadur, P., Saraswat, V., Shinnar, A., Takeuchi, M., Vaziri, M., Zhang, W. "X10 and APGAS at Petascale", *ACM ToPC*.
2015	Saraswat, V., Milthorpe, J. "The Continuous All-reduce Algorithm for Asynchronous Stochastic Gradient Descent", *NIPS 2015 Workshop*.
2014	Bergman, D., Cire, A., Sabharwal, A., Samulowitz, H., Saraswat, V., Jan van Hoeve, W. "Parallel Combinatorial Optimization with Decision Diagrams", *CPAIOR*.
2012	Shinnar, A., Cunningham, D., Saraswat, V., Herta, B. "M3R: increased performance for in-memory Hadoop jobs", *VLDB*.
2007	Saraswat, V., Jagadeesan, R., Michael, M., von Praun, C. "A Theory of Memory Models", *PPoPP*.
2006	Solar-Lezama, A., Tancau, L., Bodik, R., Saraswat, V. "Combinatorial Sketching for Finite Programs", *ASPLOS*.
2005	Jagadeesan, R., Nadathur, G., Saraswat, V. "Testing Concurrent Systems: An Interpretation of Intuitionistic Logic", *FSTTCS*.

1999	Fromherz, M., Bobrow, D., Saraswat, V. "Model-based Computing: Developing Flexible Machine Control Software", *Artificial Intelligence, 114(1-2):157-202*.
1997	Gupta, V., Jagadeesan, R., Saraswat, V. "Probabilistic Concurrent Constraint Programming", *CONCUR*.
1996	Dalrymple, M., Lamping, J., Pereira, F., Saraswat, V. "A Deductive Account of Quantification in LFG", *CSLI*
1995	Saraswat, V., Jagadeesan, R., Gupta, V. "Timed Default Concurrent Constraint Programming", *Journal of Symbolic Computation 22 (5,6), 475-520*.
1994	Fromherz, M., Bell, D., Bobrow, D., Falkenhainer, B., Saraswat, V., Shirley, M. "RAPPER: The Copier Modeling Project", *Qualitative Reasoning about Physical Systems*.
1993	Dalrymple, M., Lamping, J., Saraswat, V. "LFG Semantics via Constraints", *EACL*
1991	Raiman, O., de Kleer, J., Saraswat, V., Shirley, M. "Characterizing non-intermittent faults", *AAAI*.
1991	Saraswat, V., Rinard, M., Panagaden, P. "Semantic Foundations for Concurrent Constraint Programming", *POPL*.

Books

2003	Vijay Saraswat, ed, *Proceedings of ASIAN 03*, Springer-Verlag
1995	Vijay Saraswat and Pascal van Hentenryck, ed, *Constraint Programming: The Newport Papers*, MIT Press.
1991	Vijay Saraswat and Kazunori Ueda, ed.*Proceedings of the International Symposium on Logic Programming*, MIT Press
1991	Vijay Saraswat "Concurrent Constraint Programming", MIT Press.

Teaching

2013-2014	Graduate course on "Big Data Analysis", "Big Data Applications", U Padova.
2009-2013	"Principles and Practice of Parallel Programming", Columbia U.
2003	Graduate course on "Concurrent Constraint Programming", Penn State U.
2002	"Programming Languages", Penn State U.

Thesis Committees

2017	Stefan Muller (CMU), Arvind Neelakantan (U Mass)
2014	Laura Tittolo (U Udine)
2013	Sophia Knight (Lix Polytechnique)
2009	Carlos Olarte (Lix Polytechnique)
2005	Venkatesh Mysore (NYU)
1996	Paul Ruet (U Paris)
1994	Eric Torng (Stanford U)
1993	Francesca Rossi (U Pisa)

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