SIDDHARTH SRIVASTAVA

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Current Position

Sep 2014 – Present **Staff Scientist**, *United Technologies Research Center*.

Positions Held

Feb 2012 – Sep 2014 **Postdoctoral Scholar**, *University of California, Berkeley*.
Supervisor: Stuart Russell

Aug 2011 – Jan 2012 **Research Associate**, *University of Wisconsin Madison*.
Supervisor: Jude Shavlik

Sep 2010 – Aug 2011 **Postdoctoral Research Associate**, *University of Massachusetts Amherst*.
Supervisors: Shlomo Zilberstein and Neil Immerman

Sep 2004 – Aug 2010 **Research/Teaching Assistant**, *University of Massachusetts Amherst*.

2003 – 2004 **Senior Software Engineer**, *Veritas Software India Pvt. Ltd.*.
Supervisor: Shankar Chandramouly

2001 – 2003 **Software Engineer**, *Veritas Software India Pvt. Ltd.*.

Education

2007 – 2010 **Ph.D. in Computer Science**, *University of Massachusetts Amherst*.
GPA 4.0/4.0

Dissertation Title: Foundations and Applications of Generalized Planning

Dissertation Committee: Neil Immerman (co-chair), Shlomo Zilberstein (co-chair), George Avrunin, Hector Geffner, and J. Eliot B. Moss.

2004 – 2007 **M.S. in Computer Science**, *University of Massachusetts Amherst*.
GPA 4.0/4.0

Thesis Title: Using Abstraction for Generalized Planning

Thesis Advisors: Neil Immerman and Shlomo Zilberstein.

1996 – 2001 **Integrated M.Sc. in Mathematics and Scientific Computing**, *Indian Institute of Technology Kanpur*, Minor: Computer Science.
GPA 8.9/10.0

Thesis Title: Belief Revision, Nonmonotonic Reasoning, and an Application

Thesis Advisor: Prof. Mohua Banerjee.

Awards and Honors

2011 **Honorable Mention** for the Best Dissertation Award, ICAPS 2011.

2010 **University's Nomination for the ACM Doctoral Dissertation Award**.

2010 **Outstanding Dissertation Award**, Department of Computer Science, University of Massachusetts Amherst.

2010 **Best Paper Award**, International Conference on Automated Planning and Scheduling.

2009 Co-authored an **NSF Grant** on Foundations and Applications of Generalized Planning.

2001 **Best Final Year Thesis**, Department of Mathematics, IIT Kanpur.

2000-2001 **National Board of Higher Mathematics Scholarship** (renewed).

1999-2000 **National Board of Higher Mathematics Scholarship**.

2001 **First Prize for Trick Photography**, All India Inter-Collegiate Photography Contest, IIT Kanpur.

Professional Experience

2014 **Co-Organizer, Workshop on AI and Robotics**, *IROS-2014*.

2011 **Chair, Workshop on Generalized Planning**, *AAAI-11*.

Fall, 2010 **Instructor**, *University of Massachusetts*, Amherst.
I taught a graduate class on Advanced Topics in Automated Planning with Shlomo Zilberstein.

2009 **Co-Chair, Workshop on Generalized Planning**, *ICAPS-09*.

2009-2014 **Research Supervisor**, *UMass Amherst & UC Berkeley*.
I have supervised a number of undergraduate students at UMass Amherst and UC Berkeley in projects relating to ongoing research. As a result of this involvement, one of these students, Tianjiao (Cathy) Zhang, received an **Honorable Mention** in the **CRA's Outstanding Undergraduate Researcher Award** competition for 2011. I was also a member of Cathy's Senior Thesis Committee.

2009 **Grant Proposal for Generalized Planning**, *University of Massachusetts, Amherst*.
I wrote a successful NSF grant proposal with Neil Immerman and Shlomo Zilberstein based on my dissertation research.

2004 – 2007 **Teaching Assistant**, *University of Massachusetts*, Amherst.
I have been a teaching assistant for a discrete mathematics course for computer science majors, and for a course on computer familiarization for non-majors. My responsibilities included tutoring, grading, and helping students during office hours. I also occasionally designed and gave lectures in the course on discrete mathematics.

2001 – 2004 **Senior Software Engineer**, *Veritas Software (now Symantec)*, Pune, India.
I worked as part of a Performance Engineering group consisting almost entirely of post-doctoral scientists. My job involved isolating and eliminating bottlenecks in a product's performance. This required studying the algorithms being used in commercially deployed software products, determining their performance limitations, and developing more efficient algorithms. My area of expertise was in the File System and Data Replication products being developed at Veritas. I developed an algorithm to increase the speed of replication in *Veritas Volume Replicator*. The algorithm worked by increasing the speed of replicated writes on a secondary server. This algorithm was made a Trade Secret at Veritas.

Professional Service

Senior Program Committee Member

- International Joint Conference on Artificial Intelligence (IJCAI) 2011, 2013

Program Committee Member

- Conference on Artificial Intelligence (AAAI) 2008, 2011, 2012, 2013, 2014
- International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS) 2012, 2014
- ICAPS Workshop on Planning and Robotics (PlanRob) 2013, 2014
- AAAI Workshop on Intelligent Robotic Systems, 2013
- International Conference on Automated Planning and Scheduling (ICAPS) 2011, 2012, 2015, Robotics Track (2015)
- IJCAI Workshop on Decision Making in Partially Observable, Uncertain Worlds, 2011

Referee

- Proposal reviewer for Natural Sciences and Engineering Research Council (NSERC) of Canada

- Journal of Artificial Intelligence Research (JAIR)
- International Conference on the Principles of Knowledge Representation and Reasoning (KR 2010)
- International Conference on Automated Planning and Scheduling (ICAPS 2008 & 2007)
- ACM Symposium on Principles of Database Systems (PODS 2006)
- International Conference on Data Engineering (ICDE 2006)

Undergraduate Internships

Summer, 1998 *Chennai Mathematical Institute, Chennai, India.* Formal verification of a reactor system using the Prototype Verification System (PVS).

Summer, 1999 *Indian Institute of Sciences, Bangalore, India.* Branch prediction in microprocessors.

Summer, 2000 *INRIA, Sophia Antipolis, France.* Recognition of quadric patches in triangulated 3-D surfaces.

Publications

2015 ***Tractability of Planning with Loops***, *Siddharth Srivastava, Shlomo Zilberstein, Abhishek Gupta, Pieter Abbeel, Stuart Russell*, In AAAI, 2015.

2014 ***First-Order Open-Universe POMDPs: Formulation and Approximate Value Iteration***, *Siddharth Srivastava, Xiang Cheng, Paul Ruan, Stuart Russell*, In the Conference on Uncertainty in AI (UAI), 2014.

2014 ***Combined Task and Motion Planning Through an Extensible Planner-Independent Interface Layer***, *Siddharth Srivastava, Eugene Fang, Lorenzo Riano, Rohan Chitnis, Stuart Russell, Pieter Abbeel*, In IEEE Conference on Robotics and Automation (ICRA) 2014.

2013 ***First-Order Open-Universe POMDPs: Formulation and Algorithms***, *Siddharth Srivastava, Xiang Cheng, Stuart Russell, Avi Pfeffer*, Technical Report EECS-2013-243, EECS Department, UC Berkeley.

2013 ***Using Classical Planners for Tasks with Continuous Operators in Robotics***, *Siddharth Srivastava, Lorenzo Riano, Stuart Russell, Pieter Abbeel*, In ICAPS Workshop on Planning and Robotics.

2012 ***Learning Relational Structure for Temporal Relation Extraction***, *Tushar Khot, Siddharth Srivastava, Sriraam Natarajan and Jude Shavlik*, In UAI Workshop on Statistical Relational AI (StarAI).

2012 ***First-Order Models for POMDPs***, *Siddharth Srivastava, Stuart Russell, Avi Pfeffer*, In UAI Workshop on Statistical Relational AI (StarAI).

2012 ***Applicability Conditions for Plans with Loops: Computability Results and Algorithms***, *Siddharth Srivastava, Neil Immerman, Shlomo Zilberstein*, Artificial Intelligence, Vol. 191-192, pp. 1-19.

2011 ***Qualitative Numeric Planning***, *Siddharth Srivastava, Shlomo Zilberstein, Neil Immerman, Hector Geffner*, In Proceedings of the AAAI Conference on Artificial Intelligence, 2011.

2011 ***Termination and Correctness Analysis of Cyclic Control***, *Siddharth Srivastava, Neil Immerman, Shlomo Zilberstein*, In Proceedings of the AAAI Conference on Artificial Intelligence, 2011.

2011 ***Directed Search for Generalized Plans Using Classical Planners***, *Siddharth Srivastava, Neil Immerman, Shlomo Zilberstein, Tianjiao Zhang*, In Proc. of the International Conference on Automated Planning and Scheduling (ICAPS), 2011.

2011 ***Foundations and Applications of Generalized Planning***, *Siddharth Srivastava*, AI Communications, Vol. 24, 349-351.

2011 ***A New Representation and Associated Algorithms for Generalized Planning***, *Siddharth Srivastava, Neil Immerman, Shlomo Zilberstein*, Artificial Intelligence, Volume 175, Issue 2, 615-647.

2010 ***Computing Applicability Conditions for Plans with Loops***, *Siddharth Srivastava, Neil Immerman, Shlomo Zilberstein*, In Proc. of the International Conference on Automated Planning and Scheduling (ICAPS), 2010, **Best Paper Award**.

2010 ***Merging Example Plans into Generalized Plans for Non-deterministic Environments***, *Siddharth Srivastava, Neil Immerman, Shlomo Zilberstein*, In Proc. of the International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2010.

2009 ***Challenges in Finding Generalized Plans***, *Siddharth Srivastava, Neil Immerman, Shlomo Zilberstein*, In ICAPS-2009 Workshop on Generalized Planning: Macros, Loops, Domain Control.

2009 ***Simulating Reachability using First-Order Logic with Applications to Verification of Linked Data Structures***, *T. Lev-Ami, N. Immerman, T. Reps, M. Sagiv, Siddharth Srivastava and G. Yorsh*, In Logical Methods in Computer Science, 5(2), Paper 12, 2009.

2009 ***Abstract Planning with Unknown Object Quantities and Properties***, *Siddharth Srivastava, Neil Immerman, Shlomo Zilberstein*, In Eighth Symposium on Abstraction, Reformulation and Approximation, 2009.

2008 ***Learning Generalized Plans Using Abstract Counting***, *Siddharth Srivastava, Neil Immerman, Shlomo Zilberstein*, In Proc. of the National Conference on AI (AAAI), 2008.

2008 ***Using Abstraction for Generalized Planning***, *Siddharth Srivastava, Neil Immerman, Shlomo Zilberstein*, In International Symposium on AI and Mathematics, 2008.

2005 ***Simulating Reachability using First-Order Logic with Applications to Verification of Linked Data Structures***, *T. Lev-Ami, N. Immerman, T. Reps, M. Sagiv, S. Srivastava and G. Yorsh*, In Proc. of the International Conference on Automated Deduction, 2005.

Invited Talks

2011 **Department of Electrical and Computer Engineering, Purdue University**.

2011 **Programming Languages Group, IBM Research**.

2011 **SRI International**.

2010 **Knowledge Representation Group, Department of Computer Science, University of Toronto**.

References

Stuart Russell	Professor, Department of Electrical Engineering and Computer Sciences, University of California, Berkeley
Shlomo Zilberstein	Professor, Department of Computer Science, University of Massachusetts Amherst
Neil Immerman	Professor, Department of Computer Science, University of Massachusetts Amherst
Pieter Abbeel	Assistant Professor, Department of Electrical Engineering and Computer Sciences, University of California, Berkeley
Shankar Chandramouly	Manager, Software Engineering, CISCO Systems

Additional references are available on request.