

Kartik Talamadupula

Contact Information

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Citations: [Google Scholar - Kartik Talamadupula](#)
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Education

- Ph.D. Computer Science, Arizona State University. GPA: 3.9/4.0
- B.S. Computer Science (*Summa cum Laude*), Arizona State University. GPA: 4.0/4.0

Professional Experience

Research Staff Member 2017–Present

Human-Agent Collaboration

Manager: Rachel K. E. Bellamy

IBM T.J. Watson Research Center

Working on adding AI planning and sequential decision-making support to human-agent collaborative systems. Specific focus on natural language conversation, collective decision-making, and model acquisition via machine learning techniques.

Research Staff Member

2014–2016

End-to-End Conversation Systems

Manager: Murray S. Campbell

IBM T.J. Watson Research Center

Worked on applying automated planning, recurrent neural networks, and reinforcement learning techniques to problems in the space of automated dialog modeling, tracking, and generation. Previously applied POMDP solution, planning, and learning techniques to predictive modeling problems.

Graduate Research Assistant

2008–2014

Advisor: Subbarao Kambhampati

Arizona State University

Worked on using automated planners as mediators for human-machine teams. Ph.D. thesis centered around the problem of *Human-Robot Teaming* and providing planning support for such teams, and the various issues related to dynamic models, goals, and worlds.

Research Intern

Summer 2012

Manager: Anton V. Riabov

IBM T.J. Watson Research Center

Created a novel model for cybersecurity as part of the IBM SaferPlanet project. Implemented an integrated system that utilizes automated planning technology in order to strategically direct various components and output decisions based on data from the world.

Patents: Filed

A System and Method for Conducting Multi-Agent Automated Dialogs; B. Srivastava, and K. Talamadupula; Patent No. 93558673.

System and Method for Learning Actionable Domain Models of Plans from Online Data; S. Sohrabi, L. Manikonda, A. Riabov, K. Talamadupula, B. Srivastava, and D. Turaga; Patent No. 93559340.

System and Method for Learning Personalized Actionable Domain Models of Plans from Online Traces and a Person's Social Network; S. Sohrabi, K. Talamadupula, L. Manikonda, and B. Srivastava; Patent No. 93560680.

Mentoring Experience

- Mentored T. Chakraborti to 2016 & 2017 IBM Ph.D. Fellowships and summer internships.
- Army Research Office (ARO) [URAP](#) Graduate Mentor, 2014.

- Graduate Mentor to S. Sethia, recipient of the [FURI Fellowship](#), Spring 2014.
- Mentored S. Ravikumar (Amazon, Inc.) & M. Vijayakumar (Esri) to Masters (M.S.) thesis.

Relevant Coursework

- **Graduate:** Stochastic Dynamic Programming; Advanced Geometric Modeling; Software Verification, Validation & Testing; Applied Cryptography; Artificial Intelligence; Combinatorial Algorithms; Game Theory; Multi-Agent Systems; Machine Learning; Social Computing & Web Analytics; Randomized & Approximation Algorithms; Planning & Learning Methods in AI; Theory of Computation.
- **Undergraduate:** Computer Systems Security; Software Engineering & Project Management; Operating Systems; Multimedia Information Systems; Intro to Artificial Intelligence; Design & Analysis of Algorithms; Principles of Programming Languages; Probability & Statistics; Data Structures; Computer Organization & Architecture; Intro to Theory of Computation; Intro to Software Engineering; Assembly & Microprocessor Programming; Digital Design Fundamentals.

Programming Languages

- Java, Python, C#, C++
- JavaScript, HTML

Workshops Organized

[Human-Aware Artificial Intelligence \(HAAI-17\)](#); K. Talamadupula et al.; In the Thirty First AAAI Conference on Artificial Intelligence (AAAI), 2017.

[Closing the Cognitive Loop: Third Workshop on Knowledge, Data, and Systems for Cognitive Computing](#); K. Talamadupula, S. Sohrabi, M. Campbell; In the Twenty Fifth International Joint Conference on Artificial Intelligence (IJCAI), 2016.

Refereed Tutorials

[Human-in-the-Loop Planning and Decision Support](#); S. Kambhampati, K. Talamadupula; In the Twenty Ninth AAAI Conference on Artificial Intelligence (AAAI), 2015.

Publications: Journal Articles

Architectural Mechanisms for Handling Human Instructions for Open-World Mixed-Initiative Team Tasks and Goals; K. Talamadupula, G. Briggs, M. Scheutz, and S. Kambhampati; To appear (accepted) in *Advances in Cognitive Systems*.

Herding the Crowd: Using Automated Planning for Better Crowdsourced Planning; L. Manikonda, T. Chakraborti, K. Talamadupula, and S. Kambhampati; *Human Computation Journal (HCJ)*; Vol. 4, No. 1 (2017).

Planning for Human-Robot Teaming in Open Worlds; K. Talamadupula, J. Benton, S. Kambhampati, P. Schermerhorn, M. Scheutz; In the *ACM Transactions on Intelligent Systems and Technology (TIST)*; November 2010.

Publications: Refereed Conferences

The Limits of Abstract Evaluation Metrics: The Case of Hate Speech Detection; A. Olteanu, K. Talamadupula, and K.R. Varshney; In the proceedings of *WebScience (WebSci) 2017*.

Learning to Query, Reason, and Answer Questions on Ambiguous Texts; X. Guo, T. Klinger, C. Rosenbaum, J.P. Bigus, M. Campbell, B. Kawas, K. Talamadupula, G. Tesauro, and S. Singh; In the proceedings of the *International Conference on Learning Representations (ICLR) 2017*.

UbuntuWorld 1.0 LTS - A Platform for Automated Problem Solving and Troubleshooting in the Ubuntu OS; T. Chakraborti, K. Talamadupula, K.P. Fadnis, M. Campbell, and S. Kambhampati; In the proceedings of IAAI/AAAI, 2017.

Multiresolution Recurrent Neural Networks: An Application to Dialogue Response Generation; I.V. Serban, T. Klinger, G. Tesauro, K. Talamadupula, B. Zhou, Y. Bengio, and A. Courville; In the proceedings of AAAI, 2017; and the NIPS CoCo Workshop, 2016.

A Knowledge Driven Policy Framework for Internet of Things; E. Goynugur, G.R. De Mel, M. Sensoy, K. Talamadupula, and S. Calo; To appear (accepted), International Conference on Agents and Artificial Intelligence (ICAART) 2017.

Planning for Serendipity; T. Chakraborti, G. Briggs, K. Talamadupula, M. Scheutz, D. E. Smith, S. Kambhampati; In the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2015.

TweetSense: Context Recovery for Orphan Tweets by Exploiting Social Signals in Twitter; M. Vijayakumar; T. M. Umamaheshwar; K. Talamadupula, S. Kambhampati; In the ACM Web Science Conference, 2015 (Poster).

Predicting User Engagement on Twitter with Real-World Events; Y. Hu, S. Farnham, K. Talamadupula; In the 9th AAAI International Conference on Weblogs and Social Media (ICWSM), 2015.

Coordination in Human-Robot Teams Using Mental Modeling and Plan Recognition; K. Talamadupula, G. Briggs, T. Chakraborti, M. Scheutz, S. Kambhampati; In the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2014.

AI-MIX: How a Planner Can Help Guide Humans Towards a Better Crowdsourced Plan; L. Manikonda, T. Chakraborti, S. De, K. Talamadupula, S. Kambhampati; In the Twenty-Sixth Annual Conference on Innovative Applications of Artificial Intelligence (IAAI), 2014.

EasyChair as a Pedagogical Tool; K. Talamadupula, S. Kambhampati; In the Fifth AAAI Symposium on Educational Advances in AI (EAAI), 2014.

Architectural Mechanisms for Handling Human Instructions in Open-World Mixed-Initiative Team Tasks; K. Talamadupula, G. Briggs, M. Scheutz, S. Kambhampati; In the Second Annual Conference on Advances in Cognitive Systems (ACS), December 2013.

Herding the Crowd: Automated Planning for Crowdsourced Planning; K. Talamadupula, S. Kambhampati, Y. Hu, T. Nguyen, H. H. Zhuo; In the First International Conference on Human Computation (HCOMP) WiP Track, 2013.

RAProp: Ranking Tweets by Exploiting the Tweet/User/Web Ecosystem and Inter-Tweet Agreement; S. Ravikumar, K. Talamadupula, R. Balakrishnan, S. Kambhampati; In the ACM International Conference on Information and Knowledge Management (CIKM), 2013.

RAProp: Ranking Tweets by Exploiting the Tweet/User/Web Ecosystem and Inter-Tweet Agreement; S. Ravikumar, K. Talamadupula, R. Balakrishnan, S. Kambhampati; In the Proceedings of the 27th AAAI Conference (AAAI) LBP Track, 2013.

Dude, srsly?: The Surprisingly Formal Nature of Twitter's Language; Y. Hu, K. Talamadupula, S. Kambhampati; In the Proceedings of the 7th International AAAI Conference on Weblogs and Social Media (ICWSM), 2013.

Tell Me When and Why to Do It!: Run-time Planner Model Updates via Natural Language Instruction; R. Cantrell, K. Talamadupula, P. Schermerhorn, J. Benton, S. Kambhampati, M. Scheutz; In the Proceedings of the 7th ACM/IEEE International Conference on Human-Robot Interaction (HRI), 2012.

Integrating a Closed World Planner with an Open World Robot; K. Talamadupula, J. Benton, P. Schermerhorn, S. Kambhampati, M. Scheutz; In the Proceedings of the 24th AAAI Conference on Artificial Intelligence (AAAI), 2010.

G-value Plateaus: A Challenge for Planning; J. Benton, K. Talamadupula, P. Eyerich, R. Mattmüller, S. Kambhampati; In the Proceedings of the 20th International Conference on Automated Planning and Scheduling (ICAPS), 2010.

Finding and Exploiting Goal Opportunities in Real-time during Plan Execution; P. Schermerhorn, J. Benton, M. Scheutz, K. Talamadupula, S. Kambhampati; In the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2009.

Evaluating Temporal Planning Domains; W. Cushing, D. S. Weld, Mausam, S. Kambhampati, K. Talamadupula; In the Proceedings of the 17th International Conference on Automated Planning and Scheduling (ICAPS), 2007.

Publications: Workshops & Technical Reports

Workflow Complexity for Collaborative Interactions: *Where are the Metrics?*; K. Talamadupula, B. Srivastava, and J.O. Kephart; In the ICAPS 2017 Workshop on User Interfaces and Scheduling and Planning (UIISP).

Extracting Incomplete Planning Action Models from Unstructured Social Media Data to Support Decision Making [pdf] [slides] Manikonda, L.; Sohrabi, S.; Talamadupula, K.; Srivastava, B.; and Kambhampati, S. To appear (accepted) in the ICAPS 2017 Workshop on Knowledge Engineering for Planning and Scheduling (KEPS).

Automatic Resolution of Policy Conflicts in IoT Environments Through Planning; E. Goynugur, K. Talamadupula, G.R. de Mel, and M. Sensoy; In the proceedings of the ICAPS Scheduling and Planning Applications Workshop (SPARK), 2016.

A Formal Framework for Studying Interaction in Human-Robot Societies; T. Chakraborti, K. Talamadupula, Y. Zhang, S. Kambhampati; In the Symbiotic Cognitive Systems Workshop at AAAI, 2016.

Planning for Serendipity - Altruism in Human-Robot Cohabitation; T. Chakraborti, G. Briggs, K. Talamadupula, M. Scheutz, D. E. Smith, S. Kambhampati; In the PlanRob Workshop at ICAPS, 2015.

The Metrics Matter!: On the Incompatibility of Different Flavors of Replanning; K. Talamadupula, D. E. Smith, S. Kambhampati; arXiv Technical Report 1405.2883, 2014.

AI-MIX: How a Planner Can Help Guide Humans Towards a Better Crowdsourced Plan; L. Manikonda, T. Chakraborti, S. De, K. Talamadupula, S. Kambhampati; In the ICAPS 2014 Scheduling and Planning Applications Workshop (SPARK).

Herding the Crowd: Automated Planning for Crowdsourced Planning; K. Talamadupula, S. Kambhampati; arXiv Technical Report 1307.7720, 2013.

Strategic Planning for Network Data Analysis; K. Talamadupula, O. Udrea, A. Riabov, A. Ran-

ganathan; arXiv Technical Report 1305.2561, 2013.

On the Many Interacting Flavors of Planning for Robotics; K. Talamadupula, M. Scheutz, G. Briggs, S. Kambhampati; In the ICAPS 2013 Planning and Robotics (PlanRob) Workshop.

A Theory of Intra-Agent Replanning; K. Talamadupula, D. E. Smith, W. Cushing, S. Kambhampati; In the ICAPS 2013 Workshop on Distributed and Multi-Agent Planning (DMAP).

Planning for Human-Robot Teaming; K. Talamadupula, S. Kambhampati, P. Schermerhorn, J. Benton, M. Scheutz; In the ICAPS 2011 Scheduling and Planning Applications Workshop (SPARK).

Integrating a Closed World Planner with an Open World Robot: A Case Study; K. Talamadupula, J. Benton, P. Schermerhorn, S. Kambhampati, M. Scheutz; In the ICAPS 2009 Workshop on Bridging the Gap between Task and Motion Planning (BTAMP).

Evaluating Temporal Planning Domains; William Cushing, Daniel S. Weld, Mausam, Subbarao Kambhampati, Kartik Talamadupula; In the ICAPS 2007 Workshop on the International Planning Competition: Past, Present and Future.

System Demos and Exhibits

AI-MIX: How a Planner Can Help Guide Humans Towards a Better Crowdsourced Plan; L. Manikonda, T. Chakraborti, S. De, K. Talamadupula, S. Kambhampati; ICAPS 2014 Systems Demonstrations and Exhibits. *Best Demo Award*.

Teach Me How To Work: Natural Language Model Updates and Action Sequencing; S. Sethia, K. Talamadupula, S. Kambhampati; ICAPS 2014 Systems Demonstrations and Exhibits.

Planning for Agents with Changing Goals; K. Talamadupula, P. Schermerhorn, J. Benton, S. Kambhampati, M. Scheutz; ICAPS 2011 Demonstrations and Exhibits Program. *Placed 3rd for Best Demo*.

Research Service

- **Organizer**: SPARK Workshop (ICAPS 2017), UISP Workshop (ICAPS 2017).
- **Artificial Intelligence Professional Interest Community (PIC)**, IBM Research: Chair, Jul 2015–Nov 2016.
- **Senior Program Committee**: IJCAI 2017; IJCAI 2016.
- **Program Committee**: AAAI 2018; ICAPS 2017; AAAI 2017; ICWSM 2017; WWW 2017; AAAI 2016; ICWSM 2015; AAAI 2015; AAAI 2014; ICWSM 2014; ACM Multimedia 2013; CP4PS Workshop, AAAI 2012; TAMPRA Workshop, ICAPS 2012.
- **Auxiliary Reviewer**: WSDM 2014; AAAI 2011; ICAPS 2009.

Honors and Awards

- Letter of Commendation from the University President (Fall 2013).
- University Graduate Fellowship Award (Summer 2013).
- Science Foundation Arizona (SFAz) Fellow, 2008-2010.
- Honorable Mention, Computing Research Association (CRA) Outstanding Undergraduate Student Awards 2008.
- Department of Computer Science Distinguished Undergraduate Senior Award, 2008.
- [Fulton Undergraduate Research Initiative \(FURI\)](#) Fellow, 2008.