

Vasanth Sarathy

CONTACT INFORMATION	Department of Computer Science	<i>email:</i> vasanth.sarathy@tufts.edu
	Human-Robot Interaction Laboratory	<i>website:</i> vsarathy.com
	Tufts University	
	200 Boston Ave., Medford, MA	
EDUCATION	Ph.D., Computer Science and Cognitive Science	Expected Spring 2020
	Tufts University	
	Department of Computer Science	
	Advisors: Matthias Scheutz (C.S.) and Daniel Dennett (Cog.Sci.)	
	Juris Doctor (J.D.)	2007-2010
	Boston University School of Law	
	Member of the Bar in the Commonwealth of Massachusetts	Admitted 2010
	United States Patent and Trademark Office	Admitted 2007
	S.M., Electrical Engineering and Computer Science	2003-2005
	Massachusetts Institute of Technology	
	Advisors: Thomas Keim and Chatham Cooke	
	B.S., Electrical Engineering	1999-2003
	University of Arkansas	
	<i>Summa Cum Laude</i>	
AWARDS AND GRANTS	Finalist NSF 2026 Idea Machine Competition	2019
	National Science Foundation	
	Selected with 32 others out of 800 grant applicants	
	(Winning entries not yet announced)	
	Teaching Fellowship	2019
	Graduate Institute for Teaching (GIFT)	
	Tufts University	
	Amount: \$2000, Training Program	
	John A. Adams & Dorothy M. Adams Graduate Fellowship	2015
	Tufts University, School of Engineering	
	Amount: \$30,000	
	Graduate Student Research Competition	2016
	Tufts University	
	Title: Creative Problem Solving	
	Amount: \$1,000	
	Doctoral Consortia	
	Human-Robot Interaction (HRI), HRI Pioneers	2016
	Knowledge Representation and Reasoning (KR)	2016
	Travel Grants	
	National Science Foundation	2016, 2019
	Tufts University	2015

	Academic Merit Scholarships University of Arkansas Amount: \$1,000 (each year)	2001-2003
	Chancellor's Scholarship University of Arkansas Full tuition, room and board for all four years	1999-2003
RELEVANT EXPERIENCE	Full-Time Ph.D. Research Assistant Tufts University, Department of Computer Science Advisor: Matthias Scheutz	Fall 2015-present
	Conversational Intelligence Summer School University of Massachusetts Lowell, Moscow Institute of Physics and Technology Hosts: Anna Rumshisky, Mikhail Burtsev	June 2019
	Associate Ropes & Gray, LLP, Intellectual Property Group	2005-2013
	Full-Time M.S./Ph.D. Research Assistant Research Laboratory for Electronics M.I.T., Department of Electrical Engineering and Computer Science Advisor: Thomas Keim	2003-2005
	Research Intern Schlumberger Sugar Land Product Center, Resistivity Group Host: Mark Frey	Summer 2003
	Research Intern Schlumberger-Doll Research Center, Real-time Inversion Group Hosts: Smaïne Zeroug, Sandip Bose, Canyon Wang	Summer 2002
	Undergraduate Research Assistant University of Arkansas, Department of Electrical Engineering Advisor: Magda El-Shenawee	2002-2003
JOURNAL ARTICLES (IN PREP)	<p>[J2] Vasanth Sarathy, Marlow Fawn, and Matthias Scheutz. Knowledge Discovery and Creative Problem Solving through Environmental Exploration. <i>Journal of Artificial Intelligence Research</i>, 2020 (in prep)</p> <p>[J1] Vasanth Sarathy, Giordano Ferreira, Emily Sim, Matthias Scheutz, and Kamal Premaratne. Agent-based Simulations of Norm Learning under Epistemic Uncertainty. <i>Autonomous Agents and Multi-Agent Systems</i>, 2020 (in prep)</p>	
JOURNAL ARTICLES	<p>[J5] Vasanth Sarathy, Thomas Arnold, and Matthias Scheutz. When Exceptions Are the Norm: Exploring the Role of Consent in HRI. <i>ACM Transactions on Human-Robot Interaction (Formerly, Journal of Human-Robot Interaction)</i>, 8(3):14:1–14:21, July 2019</p> <p>[J4] Matthias Scheutz, Thomas Williams, Evan Krause, Bradley Oosterveld, Vasanth Sarathy, and Tyler Frasca. An Overview of the Distributed Integrated Affect and Reflection Cognitive DIARC Architecture. In <i>Cognitive Architectures</i>, pages 165–193. Springer, 2019</p>	

- [J3] **Vasanth Sarathy**. [Real World Problem-Solving](#). *Frontiers in Human Neuroscience*, 12, 2018
Impact Factor: 3.2
- [J2] **Vasanth Sarathy** and Matthias Scheutz. [MacGyver Problems: AI Challenges for Testing Resourcefulness and Creativity](#). *Advances in Cognitive Systems*, 6, 2018
- [J1] **Vasanth Sarathy** and Matthias Scheutz. [A Logic-based Computational Framework for Inferring Cognitive Affordances](#). *IEEE Transactions on Cognitive and Developmental Systems*, 10(1):26–43, 2018
Impact Factor: 2.8

**CONFERENCE
PAPERS
(UNDER
REVIEW)**

- [C5] Thomas Arnold, **Vasanth Sarathy**, and Matthias Scheutz. [Reining in MacGyver: Can we Responsibly Incentivize Creative AI Behavior?](#) In *Proceedings of We Robot*, 2020
- [C4] **Vasanth Sarathy**, Marlow Fawn, and Matthias Scheutz. [On Solving Seemingly Impossible Problems](#). In *Proceedings of the Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI-20)*, 2020
- [C3] **Vasanth Sarathy**, Antonio Roque, Alex Tsuetaki, and Matthias Scheutz. [Interpreting Context-Sensitive Indirect Speech Acts using Non-Monotonic Reasoning](#). In *Proceedings of the Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI-20)*, 2020
- [C2] Nicholas Rabb, **Vasanth Sarathy**, and Matthias Scheutz. [Abduction Under Uncertainty in Open World Environments](#). In *Proceedings of the Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI-20)*, 2020
- [C1] **Vasanth Sarathy**, Giordano Ferreira, Emily Sim, Matthias Scheutz, and Kamal Premaratne. [Learning Context-Sensitive Norm Representations under Uncertainty](#). In *Proceedings of the Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI-20)*, 2020

**REFEREED
CONFERENCE
PROCEEDINGS**

- [C10] **Vasanth Sarathy** and Matthias Scheutz. [On Resolving Ambiguous Anaphoric Expressions in Imperative Discourse](#). In *Proceedings of the Thirty-Third AAAI Conference on Artificial Intelligence (AAAI-19)*, 2019 (Oral Presentation)
Acceptance rate: 16.2% (Oral: 3%)
- [C9] Naveen Sundar Govindarajulu, Selmer Bringsjord, Rikhiya Ghosh, and **Vasanth Sarathy**. [Towards the Engineering of Virtuous Machines](#). In *Proceedings of the 2nd AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society (AIES-19)*, 2019 (Spotlight Talk)
Acceptance rate: 31.8%
- [C8] **Vasanth Sarathy**. [Learning Context-Sensitive Norms under Uncertainty](#). In *Proceedings of the 2nd AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society (AIES-19)*, 2019
Acceptance rate: 31.8%
- [C7] Daniel Kasenberg, **Vasanth Sarathy**, Thomas Arnold, Matthias Scheutz, and Tom Williams. [Quasi-Dilemmas for Artificial Moral Agents](#). In *International Conference on Robot Ethics and Standards*, 2018 (Oral Presentation)
- [C6] Evana Gizzi, Lisa Le Vie, Matthias Scheutz, **Vasanth Sarathy**, and Jivko Sinapov. [Knowledge Acquisition in the Cockpit Using One-Shot Learning](#). In *Proceedings of the 2018 IEEE National Aerospace and Electronics Conference (NAECON)*. 2018

- [C5] **Vasanth Sarathy**, Bradley Oosterveld, Evan Krause, and Matthias Scheutz. [Learning Cognitive Affordances for Objects from Natural Language Instruction](#). In *Proceedings of the Sixth Annual Conference on Advances in Cognitive Systems*, 2018 (Oral Presentation)
- [C4] **Vasanth Sarathy**, Matthias Scheutz, and Bertram Malle. [Learning Behavioral Norms in Uncertain and Changing Contexts](#). In *Proceedings of the 2017 8th IEEE International Conference on Cognitive Infocommunications (CogInfoCom)*, 2017 (Oral Presentation)
- [C3] **Vasanth Sarathy**, Matthias Scheutz, Joseph Austerweil, Yoed Kenett, Mowafak Allaham, and Bertram Malle. [Mental Representations and Computational Modeling of Context-Specific Human Norm Systems](#). In *Proceedings of the 39th Annual Meeting of the Cognitive Science Society*, 2017 (Oral Presentation)
Acceptance rate: 29% [\[Robert Glushko Prize\]](#)
- [C2] **Vasanth Sarathy** and Matthias Scheutz. [Beyond Grasping - Perceiving Affordances Across Various Stages of Cognitive Development](#). In *Proceedings of the The Sixth Joint IEEE International Conference Developmental Learning and Epigenetic Robotics (ICDL)*, 2016 (Oral Presentation)
Acceptance rate: 28%
- [C1] **Vasanth Sarathy** and Matthias Scheutz. [Cognitive Affordance Representations in Uncertain Logic](#). In *Proceedings of the 15th International Conference on Principles of Knowledge Representation and Reasoning (KR)*, 2016 (Spotlight Talk)
Acceptance rate: 26.9%

**REFEREED
WORKSHOP
PROCEEDINGS**

- [W8] **Vasanth Sarathy** and Matthias Scheutz. [Multiagent Norm Identification: A Belief-Theoretic Approach for Automatically Identifying Explicitly Represented Norms from Observation](#). In *Proceedings of the New England Machine Learning Conference*, 2018
- [W7] **Vasanth Sarathy**. [Real World Problem Solving: How can one's environment influence the cognitive processes underlying creative problem-solving?](#) In *Proceedings of the 5th Meeting of the Society for the Neuroscience of Creativity*, 2018
- [W6] **Vasanth Sarathy** and Matthias Scheutz. [MacGyver Test](#). In *Proceedings of the Sixth Annual Conference on Advances in Cognitive Systems*, 2018
- [W5] Evana Gizzi, Lisa Le Vie, Matthias Scheutz, **Vasanth Sarathy**, and Jivko Sinapov. [A Generalized Framework for Detecting Anomalies in Real-Time Using Contextual Information](#). In *Proceedings of the 2018 IJCAI Workshop on Modeling and Reasoning in Context (MRC)*. 2018
- [W4] **Vasanth Sarathy**, Jason Wilson, Thomas Arnold, and Matthias Scheutz. [Enabling Basic Normative HRI in a Cognitive Robotic Architecture](#). In *Proceedings of the 2nd workshop on Cognitive Architectures for Social Human-Robot Interaction at the 11th ACM/IEEE Conference on Human-Robot Interaction*, 2016
- [W3] **Vasanth Sarathy**. [Inferring Higher-Order Affordances for more Natural Human-Robot Collaboration](#). In *Proceedings of the Human-Robot Interaction (HRI) Pioneers Workshop*, 2016
- [W2] **Vasanth Sarathy** and Matthias Scheutz. [Cognitive Affordance Representations in Uncertain Logic](#). In *Doctoral Consortium at the 15th International Conference on Principles of Knowledge Representation and Reasoning (KR)*, 2016
- [W1] **Vasanth Sarathy** and Matthias Scheutz. [Semantic Representation of Objects and Function](#). In *Proceedings of the 2015 IROS Workshop on Learning Object Affordances*, 2015

OTHER TALKS AND POSTERS	Vasanth Sarathy. Natural Language Understanding via Commonsense Reasoning . In <i>Machine Intelligence Conference</i> , 2019	
	Vasanth Sarathy. Real World Problem Solving . In <i>Graduate Student Research Symposium at Tufts University</i> , 2018 [Best Poster]	
	Vasanth Sarathy. Macgyver Robots . In <i>Graduate Student Research Symposium at Tufts University</i> , 2016 [Best Talk]	
TEACHING, ADVISING AND MENTORSHIP	<i>Teaching</i>	
	Teaching Assistant	Spring 2019
	Tufts University Department of Computer Science	
	Ethics for AI, Robotics and Human-Robot Interaction	
	Teaching Assistant	Spring 2019
	Tufts University Department of Computer Science	
	Human-Robot Interaction	
	Teaching Assistant	Spring 2002
	University of Arkansas Department of Electrical Engineering	
	Electromagnetic Fields and Waves	
	Teaching Assistant	Fall 2002
	University of Arkansas Department of Electrical Engineering	
	Electromechanical Energy Conversion	
	<i>Selected Advising and Mentorship</i>	
	Undergraduate Research Project Co-Advisor	Summer-Fall 2019
	Advisee: Jasmine Falk, Tufts Undergraduate	
	Topic: Reasoning in human-human dialog understanding: A corpus analysis	
	Undergraduate Research Project Co-Advisor	Summer-Fall 2019
	Advisee: Alexander Tsuetaki, Tufts Undergraduate	
	Topic: Human-robot study design for evaluating human expectations of robot competencies	
	Undergraduate Research Project Co-Advisor	Summer-Fall 2019
	Advisee: Marlow Fawn, Tufts Undergraduate	
	Topic: Robotic architecture for creative problem solving	
	Undergraduate Research Project Co-Advisor	Spring-Fall 2019
	Advisee: Howard Kim, Tufts Undergraduate	
	Topic: Agent-based simulations for evaluating AI norm learning algorithms	
	Tufts Summer Scholars Research Project Co-Advisor	Summer 2018
	Advisee: Emily Sim, Tufts Undergraduate	
	Topic: Techniques for reducing computational complexity of uncertainty processing	
	Undergraduate Research Project Supervisor	2016-2018
	Advisees (Tufts Undergraduates): Jacqueline Enderle, Vivian Hong, Mar Freeman, Daniel Atik, Benajamin Machlin, Kennedy Baily, Ballard Blair, Erica Luzzi, and Danish Bhatti	

Summer Project Supervisor 2016-2018
 Advisees (High-School students): Connor Coale (Manchester-By-The-Sea), Dhruv Srinivas (Concord Academy), and Jerry Liang (Concord Academy)

Intellectual Property Law Project Supervisor 2006-2013
 Advisees (Ropes & Gray): Jason Sussman, Saurabh Gupta, Grace Wang, Caroline Greenwood, Karan Singh, Tan Mau Wu, Laura Zager, Tushar Parlikar, Matthew Bertenthal

**INVITED
TALKS AND
GUEST
LECTURES**

“Non-monotonic Reasoning for NLP” Fall 2019*
 MIT-IBM Watson AI Lab
 IBM Research AI
 Host: David Cox

“Role of Reasoning in Natural Language Processing” Fall 2019*
 Text Machine Laboratory for Natural Language Processing
 University of Massachusetts at Lowell
 Host: Anna Rumshisky

“Reasoning with Social Norms for Assistive Robotics” (Guest Lecture) Fall 2019
 Course: Socially Assistive Robotics
 Tufts University
 Host: Elaine Short

“Reasoning for Natural Language Understanding” Fall 2019
 Machine Learning Lab
 Tufts University
 Host: Liping Liu

“Interval Uncertainty and Dempster-Shafer Theory” Fall 2019
 Automated Systems and Robotics Lab
 Tufts University
 Host: Jason Rife

“The Ethics of Conversational AI” (Guest Lecture) Spring 2019
 Course: Ethics of AI, Robotics and Human-Robot Interaction
 Tufts University
 Host: Thomas Arnold

“Beyond Bayesian: Modeling Uncertainty in Cognitive Science” Spring 2019
 NeuroCognition of Language Lab
 Tufts University, Massachusetts General Hospital
 Host: Gina Kuperberg

**PROFESSIONAL
SERVICE**

Referee Service
 Journal of Artificial Intelligence Research (JAIR), AAI, AAMAS, HRI, ICDL, IROS,
 AAI Fall Symposium

Workshop Organization
Program Committee Co-Chair 2016-2017
 Human-Robot Interaction (HRI) Pioneers Workshop

*Scheduled in November 2019

	Grant Review Committee Graduate Student Research Competition Tufts University	Fall 2017
PUBLIC OUTREACH	<i>Talks</i> TEDx Tufts - “MacGyver Machines” Taste of Science - “Common Sense is not Common...Especially Among Robots” Cambridge Science Festival - “What would MacGyver Do?”	 2019 2018 2016
	<i>Community Engagement</i> Hawken School (OH) - Consulting for Curriculum Development Medford High School (MA) - Mentor, Reverse Science Fair Judge The Creativity Post - Invited Blog Post City of Boston (MA) - Robot Block Party Volunteer Tufts Community Day - Volunteer M.I.T./Sidney-Pacific - Chair Comm. on Scholarly Interaction Univ. of Arkansas/Eta Kappa Nu - President	 2018-present 2017-present 2018 2017 2016 2004-2005 2002-2003
SELECTED PRESS	<i>Quoted:</i> Two Tufts Researchers in National Science Foundation Big Ideas Competition. Tufts Now. https://now.tufts.edu/articles/two-tufts-researchers-nsf-big-ideas-competition	 June 2019
	<i>Interviewed:</i> Get Uncomfortable - The Value of Real World Problems Episode 9. Redesigning School Podcast. http://redesigningschool.org/the-pod/	 May 2019
	<i>Quoted:</i> AI is Smart. Can we Make it Kind? Tufts Magazine https://tuftsmagazine.com/issues/magazine/2019/spring/ai-smart-can-we-make-it-kind	 Spring 2019
SKILLS	Computer Languages: Java, Python, Prolog, Answer Set Programming Deep Learning/ ML: PyTorch, Tensorflow, scikit-learn Robotics: ROS Cognitive Systems: DIARC, SOAR, ACT-R Misc: vim, bash, L ^A T _E X, git	
	Languages Hindi (proficient/fluent) Tamil (proficient/fluent oral, beginner written)	
	Graduate Courses Human-Robot Interaction, Ethics of AI, Robots and Human-Robot Interaction, Cognitive Neuroscience, Cognitive Psychology, Experimental Design, Theory of Computation, Cognitive Science of Human Communication, Philosophical Foundations of Cognitive Science, Machine Learning, Computational Models in Cognitive Science, Cognitive Science of Language	
INTERESTS	Cartooning and Visual Art ELSA Moot Court Exhibition - World Trade Organization The Record - B.U. Law Alumni Magazine Legally Drawn (www.legallydrawn.com)	 2017 2010 2008-2012