

Vasanth Sarathy

CONTACT INFORMATION	Department of Computer Science Human-Robot Interaction Laboratory Tufts University 200 Boston Ave., Medford, MA	<i>email:</i> vasanth.sarathy@tufts.edu <i>website:</i> vsarathy.com
EDUCATION	Ph.D., Computer Science and Cognitive Science Tufts University Department of Computer Science Advisors: Matthias Scheutz (C.S.) and Daniel Dennett (Cog.Sci.)	Expected Spring 2020
	Juris Doctor (J.D.) Boston University School of Law Member of the Bar in the Commonwealth of Massachusetts United States Patent and Trademark Office	2007-2010 Admitted 2010 Admitted 2007
	S.M., Electrical Engineering and Computer Science Massachusetts Institute of Technology Advisors: Thomas Keim and Chatham Cooke	2003-2005
	B.S., Electrical Engineering University of Arkansas <i>Summa Cum Laude</i>	1999-2003
AWARDS AND GRANTS	Grand Prize Winner – NSF 2026 Idea Machine Competition National Science Foundation Selected with 4 others out of 800 submissions Title: From Thinking to Inventing Impact: “Creative Problem Solving” established as an NSF research priority	2020
	Teaching Fellowship Graduate Institute for Teaching (GIFT) Tufts University \$2000, Training Program	2019
	John A. Adams & Dorothy M. Adams Graduate Fellowship Tufts University, School of Engineering \$30,000	2015
	Graduate Student Research Competition Tufts University Title: Creative Problem Solving \$1,000	2016
	Doctoral Consortia Artificial Intelligence, Ethics and Society (AIES) Human-Robot Interaction (HRI), HRI Pioneers Knowledge Representation and Reasoning (KR)	2019 2016 2016
	Travel Grants National Science Foundation Tufts University	2016, 2019 2015

	Academic Merit Scholarships	2001-2003
	University of Arkansas \$1,000 (each year)	
	Chancellor's Scholarship	1999-2003
	University of Arkansas Full tuition, room and board for all four years	
RELEVANT EXPERIENCE	Full-Time Ph.D. Research Assistant	Fall 2015-present
	Tufts University, Department of Computer Science Advisor: Matthias Scheutz	
	Conversational Intelligence Summer School	June 2019
	University of Massachusetts Lowell, Moscow Institute of Physics and Technology Hosts: Anna Rumshisky, Mikhail Burtsev	
	Associate – Intellectual Property Attorney	2005-2013
	Ropes & Gray, LLP, Intellectual Property Group	
	Full-Time M.S./Ph.D. Research Assistant	2003-2005
	Research Laboratory for Electronics M.I.T., Department of Electrical Engineering and Computer Science Advisor: Thomas Keim	
	Research Intern	Summer 2003
	Schlumberger Sugar Land Product Center, Resistivity Group Host: Mark Frey	
	Research Intern	Summer 2002
	Schlumberger-Doll Research Center, Real-time Inversion Group Hosts: Smaïne Zeroug, Sandip Bose, Canyon Wang	
	Undergraduate Research Assistant	2002-2003
	University of Arkansas, Department of Electrical Engineering Advisor: Magda El-Shenawee	
JOURNAL ARTICLES (IN PREP)	[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)	
	[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)	
JOURNAL ARTICLES	[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	
	[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	

- [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

**REFEREED
CONFERENCE
PROCEEDINGS**

- [C11] Antonio Roque, Alexander Tsuetaki, **Vasanth Sarathy**, and Matthias Scheutz. [Developing a Corpus of Indirect Speech Act Schemas](#). In *Proceedings of the Twelfth International Conference on Language Resources and Evaluation (LREC 2020)*, 2020
- [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 *Machine Intelligence Conference*, 2019

Vasanth Sarathy. [Real World Problem Solving](#). In *Graduate Student Research Symposium at Tufts University*, 2018 [[Best Poster](#)]

Vasanth Sarathy. [Macgyver Robots](#). In *Graduate Student Research Symposium at Tufts University*, 2016 [[Best Talk](#)]

**TEACHING,
ADVISING AND
MENTORSHIP**

Teaching

Co-Instructor

Spring 2020

Tufts University Department of Computer Science

Ethics for AI, Robotics and Human-Robot Interaction

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

Selected Advising and Mentorship

Undergraduate Research Project Co-Advisor Winter-Spring 2020
 Advisee: Faizan Muhammad, Tufts Undergraduate
 Topic: Novelty Discovery and Creative Problem Solving

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

**INVITED
TALKS AND
GUEST
LECTURES**

Bertenthal

“Creative Problem Solving”

Google Brain

Host: Alex Wiltscho

Winter 2020*

“Sense-Making with Symbolic Reasoning for NLU and Creativity”

MIT-IBM Watson AI Lab

IBM Research AI

Host: David Cox

Winter 2020

“Reasoning with Social Norms for Assistive Robotics” (Guest Lecture)

Course: Socially Assistive Robotics

Tufts University

Host: Elaine Short

Fall 2019

“Reasoning for Natural Language Understanding”

Machine Learning Lab

Tufts University

Host: Liping Liu

Fall 2019

“Interval Uncertainty and Dempster-Shafer Theory”

Automated Systems and Robotics Lab

Tufts University

Host: Jason Rife

Fall 2019

“The Ethics of Conversational AI” (Guest Lecture)

Course: Ethics of AI, Robotics and Human-Robot Interaction

Tufts University

Host: Thomas Arnold

Spring 2019

“Beyond Bayesian: Modeling Uncertainty in Cognitive Science”

NeuroCognition of Language Lab

Tufts University, Massachusetts General Hospital

Host: Gina Kuperberg

Spring 2019

*Scheduled in March 2020

PROFESSIONAL SERVICE *Referee Service*
Journal of Artificial Intelligence Research (JAIR), AAAI, IJCAI, AAMAS, ACL, HRI, ICDL, IROS, AAAI Fall Symposium

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

Grant Review Committee Fall 2017
Graduate Student Research Competition
Tufts University

PUBLIC OUTREACH *Talks*
TEDx Tufts - “MacGyver Machines” 2019
Taste of Science - “Common Sense is not Common...Especially Among Robots” 2018
Cambridge Science Festival - “What would MacGyver Do?” 2016

Community Engagement
Hawken School (OH) - Consulting for Curriculum Development 2018-present
Medford High School (MA) - Mentor, Reverse Science Fair Judge 2017-present
The Creativity Post - Invited Blog Post 2018
City of Boston (MA) - Robot Block Party Volunteer 2017
Tufts Community Day - Volunteer 2016
M.I.T./Sidney-Pacific - Chair Comm. on Scholarly Interaction 2004-2005
Univ. of Arkansas/Eta Kappa Nu - President 2002-2003

SELECTED PRESS *Quoted:* Tufts Team Wins a Grand Prize in NSF Idea Machine Competition. Tufts Now. February 2020
<https://now.tufts.edu/articles/tufts-team-wins-grand-prize-nsf-idea-machine-competition>

Interviewed: Get Uncomfortable - The Value of Real World Problems Episode 9. Redesigning School Podcast. May 2019
<http://redesigningschool.org/the-pod/>

Quoted: AI is Smart. Can we Make it Kind? Tufts Magazine Spring 2019
<https://tuftsmagazine.com/issues/magazine/2019/spring/ai-smart-can-we-make-it-kind>

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^AT_EX, git

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

Languages

Hindi (proficient/fluent)

Tamil (proficient/fluent oral, beginner written)

INTERESTS

Cartooning and Visual Art

ELSA Moot Court Exhibition - World Trade Organization

2017

The Record - B.U. Law Alumni Magazine

2010

Legally Drawn (www.legallydrawn.com)

2008-2012