Preeti Ramaraj

preetir@umich.edu | (734) 709-2510 | 418 2nd Street Apt #8, Ann Arbor, MI | preetiramaraj.github.io

Research Interest

My focus is on learning to characterize a non-expert user's initial mental model of a robot. My goal is to be able to characterize the gaps in the user's mental model, such that this knowledge can be used to bridge the gap between the users' expectations of a robot's capabilities and the robot's actual capabilities, through appropriate feedback mechanisms.

Education

University of Michigan
Ph.D. in Computer Science and Engineering — January 2017 – April 2021
Advisors: Dr. John Laird & Dr. Walter Lasecki

University of Michigan
Master of Science in Computer Science and Engineering — September 2015 – April 2017
GPA: 3.89/4.0
Relevant Coursework: Advanced Artificial Intelligence, Ethics for Robotics, Natural Language Processing, Human Learning and Memory, Statistical Methods

University of Mumbai
Bachelor of Engineering (Computer Engineering) — August 2008 – May 2012
First Class with Distinction - 75%
Relevant Coursework: Human Computer Interaction, Neural Networks and Fuzzy Logic, Artificial Intelligence

Publications

Workshops

1. **Preeti Ramaraj**, Saurav Sahay, Shachi H. Kumar, Walter Lasecki & John E. Laird (2019). Towards using transparency mechanisms to build better mental models. In *ACS 2019: 7th Goal Reasoning Workshop. Cambridge, MA.*
2. **Preeti Ramaraj** and John E. Laird (2018). Establishing Common Ground for Learning Robots. In *RSS 2018: Workshop on Models and Representations for Natural Human-Robot Communication. Pittsburgh, PA.*

Posters

1. **Preeti Ramaraj**, Saurav Sahay, Shachi H. Kumar, Walter Lasecki & John E. Laird .Exploring Transparency Mechanisms for Identification of Interaction Failures in Human-Robot Interaction. CRA-W Grad Cohort Workshop, Chicago IL, 2019.

Projects

1. **Mining Insights from Hardware Errata Documents** — September 2016 – December 2016
   Used errata documentation to identify interesting patterns and conclusions about product bugs, such as common sources of errors. Created a database of over 2,000 different ARM errata and experimented with natural language processing methods ranging from Word2Vec, non-negative matrix factorization and recurrent neural networks.
2. **Motivated Learning – Replication project** — January 2016 – April 2016
   Replicated project based on the study specified in "*Graham, J., Starzyk, J. A., Ni, Z., He, H., Teng, T. H., & Tan, A. H. (2015, July). A comparative study between motivated learning and reinforcement learning. In 2015 International Joint Conference on Neural Networks (IJCNN)(pp. 1-8). IEEE.*" in order to test the hypothesis that Motivated Learning earns a higher average reward than Reinforcement Learning in the custom dynamic environment specified. The hypothesis was replicated successfully.
3. **Index-based Load Optimization in MySQL** — September 2015 – December 2015
   Implemented a drop-and-rebuild-indexes scheme around a load operation to automate this operation to improve performance of loading huge data into databases in MySQL
4. **ANFIS based Spam Filtering Model for Social Networking Websites** — August 2011 – May 2012
   Developed a method in which an adaptive neuro fuzzy inference system (ANFIS) that incorporates the advantages of both the neural networking concepts and fuzzy logic was used to identify spam messages on social networking websites. The paper describing this method was published in IJCA (International Journal of Computer Applications) - April 2012 Edition.

Experience

1. **Intel Labs (Research Intern – Anticipatory Computing Lab)** May 2018 – September 2018
   Implemented language and visual transparency mechanisms in the Rosie agent and conducted a user study to test the efficacy of these mechanisms in helping non-expert users identify errors that arise when teaching new tasks.
2. **Microsoft (Software Engineer)** July 2012 – July 2015
   - Instrumental in shipping of Release Management for Visual Studio 2013. Took end-to-end ownership of the front-end for the configuration tools for server and deployment agent using WPF and C#
   - Contributed to releases in the Dynamics Marketing team. Pilot-tested TDD in individual execution to increase Code-Coverage to 100%. Conducted TDD workshop for the team to push for team-wide adoption.
   - As a part of Microsoft Reference Management Center (MRMC) team in the Marketing space, owned October '14 release involving system upgrade from CRM 2011 to CRM 2013 online and creating Power BI reports for the customers and business stakeholders on time despite changing data requirements resulting in smooth transition from current solution.
   - End-to-end ownership of migration of 'JADE' application (data warehouse for Microsoft's consulting business) to the internal Singularity hardware platform. Worked on SQL Server 2012 Proof-of-concept to adopt the SQL 2012 Always On feature in JADE.
   - Ownership of test phase of release in the Products and Services space involving upgrade of message server from Windows 2003 to Windows 2008 Server R2. Involved in design and scenario discussions, responsible for end-to-end testing for a v1 project, LinkGen. Owned a sprint release and delivered test case execution and daily status reports on time despite resource constraints.
3. **Microsoft (Intern – Software Development Engineer)** June 2011 – August 2011
   Implemented the Central Data Dictionary – an anytime accessible Azure-based web application in which users can refer to the business descriptions and the various metadata of Warehouse database objects and cube measures.

Skills

Programming: C#, Python, JAVA, C++, SQL, SML (Soar Markup Language)
Web Technologies: HTML, BootStrap, JavaScript, WCF Services, WPF
Tools: Visual Studio, R, MATLAB, Eclipse, Microsoft SQL Server, MySQL, Microsoft Azure, IIS Server, Team Foundation Server, Power BI, Git
Languages: English (Native), Hindi (Fluent), Tamil (Fluent), Marathi (Proficient)

Professional Activities

Academic Talks

1. **Exploring Transparency Mechanisms for Identification of Interaction Failures in HRI** May 2019
   39th Soar Workshop, Ann Arbor, MI
2. **Learning Instructor Expectations in ITL Agent Interaction** May 2018
   38th Soar Workshop, Ann Arbor, MI
3. **How can Rosie tell me what it can do for me?** June 2017
   37th Soar Workshop, Ann Arbor, MI
4. **Understanding Agent Knowledge through Conversation** June 2016
   36th Soar Workshop, Ann Arbor, MI

Conference Organization

1. **Reviewer:** UIST 2019
2. **Programme Committee**: Combined Workshop on Spatial Language Understanding (SpLU) & Grounded Communication for Robotics (RoboNLP) at NAACL-19
3. **Conference Staff:** Michigan AI Symposium – AI and Society at University of Michigan (Fall 2018)

Service and Volunteering Activities

1. **Michigan AI Symposium – AI and Society,** University of Michigan November 2018
   Led an unconference session for the topic: "AI in everyday life: What is our role as researchers in defining how and the purposes for which AI systems can be used?"
2. **Michigan AI Blog,** University of Michigan Fall 2018 – Present
   Editor, Curator and Maintainer of blog site
   Created the Michigan AI blog and help curate and edit potential blog posts from contributors in the AI lab.
3. **ECSEL+ (Ensemble of Computer Science and Engineering Ladies +)** July 2017 – June 2019
   Co-Chair
   - Organized and ran the group, which involved interacting with faculty and staff and providing a support group and community for the current graduate student members

- Introduced the Inclusivity initiative, to provide opportunities for current graduate students in CSE department to learn to contribute positively to department climate
- Organized Young Women Professional Roundtables, for current graduate members to meet visiting women professionals

4. **Lunch and lab with a Graduate Student**, University of Michigan — Fall 2015, Fall & Winter 2016-2018
   Graduate Student Mentor
   Met with total 21 undergraduate students to discuss graduate studies, potential research opportunities and the application process
5. **Explore Graduate Studies in CSE,** University of Michigan — September 2017
   Volunteer
   Provided 1:1 writing feedback on graduate school application personal statements for participants at the workshop
6. **eVidyaloka** — June 2013- December 2013, January 2014 – April 2014
   Volunteer Teacher
   - Taught a class of 20 7^{th}-8^{th} grade students – English grammar
   - Taught a class of 20 5^{th}-6^{th} grade students – Basic computer skills
7. **BootCamp Committee**, MACH IT, Microsoft — January 2013 – June 2013
   Lead
   - Led the internship on-boarding process – organizing technical brown-bag sessions and new employee orientations
   - Led the FTE on-boarding process for new hires and incorporated process improvements to events such as the new-hire Bootcamp and LEAP that had direct impact to business