

M Seetha Ramaiah

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RESEARCH OBJECTIVES

- ◇ **Long-term:** Understand the workings of consciousness through scientific means.
- ◇ **Medium-term:** Get exposed to various conceptual, mathematical and computational tools and techniques through different means such as industrial projects, teaching and academic research in the following areas: Artificial Intelligence, Machine Learning, Robotics, Cognitive Science and Neuroscience.
- ◇ **Short-term:** Obtain an industrial position, which offers an opportunity to gain experience with large scale problems and tools in AI and related areas.

EDUCATION

- ◇ **PhD in Computer Science & Engineering**, (CPI: 7.5/10)
Indian Institute of Technology Kanpur
Thesis Supervisors: Prof. Amitabha Mukerjee, Prof. Harish Karnick
Thesis Title: Motion Planning on Visual Manifolds
Period: Dec 2008 - Feb 2018 (expected to submit the thesis)
- ◇ **MTech in Computer Science & Engineering**, (CPI: 6.57/10)
Indian Institute of Technology Kanpur
Thesis Supervisor: Prof. T V Prabhakar
Thesis Title: Application of Semantic Web Technologies in Personal Knowledge Management over a P2P Network: Semantic and Visualization Aspects
Period: Jul 2005 - Jul 2007.
- ◇ **BTech in Computer Science & Engineering**, (Percentage: 67.0)
G Pulla Reddy Engineering College, Kurnool, AP.
Period: Dec 2000 - Apr 2004.

RESEARCH INTERESTS

- ◇ **Current interests:** My current interests are in the fields of Computational Robotics, Machine Learning and Cognitive Science. My PhD work focuses on Motion Planning methods inspired by human cognition. We developed an alternative characterization of the notion of *Configuration Space*, which we call *Visual Configuration Space*. This new characterization allows a robot to discover its own body structure and plan obstacle-free motions in its peripersonal space using a set of its own images in random poses. Here, we do not assume any knowledge of geometry of the robot, obstacles or the environment. Thus, this method requires much less time from an expert to create hand-engineered models of the robot, obstacles, and the environment, in order to plan obstacle-free motions for the robot. This work is based on the formalism of manifolds and manifold learning from robot images and hence we call it *Motion Planning on Visual Manifolds*.
- ◇ **Past interests:** In the past, during my M.Tech, I had worked in Ontology Engineering with applications to Personal Knowledge Management. This work was part of two workshop papers, one at ICSE-2007 and another at CHI-2008.

SKILLS

- ◇ **Computing skills:** Python, C, C++, Java, Matlab, Ruby, HTML, JavaScript, PHP, SQL, LaTeX, Firefox extension development, Web development.
- ◇ **Languages known:** Telugu (native), English (professional), Hindi (intermediate), Esperanto (basic)

- INDUSTRIAL EXPERIENCE
- ◇ **Associate Software Engineer**, Symantec, Pune, India. (Aug 2007 - Jun 2008)
 - ◇ **Software Engineer**, Symantec, Pune, India. (Jul 2008 - Dec 2008)
I was a developer in the Bare Metal Restore (BMR) team of the NetBackup software unit at Pune, India. My work mainly consisted of fixing critical bugs in the earlier versions of BMR.
- ACADEMIC EXPERIENCE
- ◇ **Teaching Assistant**, Indian Institute of Technology Kanpur. (Aug 2005 - Apr 2006)
Course: Fundamentals of Computing
 - ◇ **Research Assistant** to Prof. T V Prabhakar, Indian Institute of Technology Kanpur. (Aug 2006 - Jul 2007)
 - ◇ **Tutor**, Indian Institute of Technology Kanpur. (Jul 2010 - Dec 2010)
Course: Fundamentals of Computing
This is an introductory course on programming for the first year students at IIT Kanpur. My duty was to take a tutorial class once in a week to ensure that the students (of a given section) understood the important concepts taught during that week. I was also involved in designing the assignment problems and grading the quizzes and exams.
 - ◇ **Teaching Assistant**, Indian Institute of Technology Kanpur. (Dec 2010 - May 2014)
Courses: Program Analysis, Verification, and Testing; Machine Learning Tools and Techniques; Artificial Intelligence; Cognitive Science; Computer Vision and Image Processing; Natural Language Processing.
During this period, my main duties included grading of student quizzes, assignments (sometimes exams) and course projects and maintaining course web pages. Most of these assignments and projects were implementation based and grading them involved active interactions with the students of the corresponding courses.
- OPEN SOURCE PROJECTS
- ◇ **BYTubeD: Bulk YouTube video Downloader**. (Apr 2010 - Sep 2013)
This was a Firefox extension to download YouTube videos in bulk, which could be used to download all/selected YouTube videos from any page that had YouTube links. I developed and maintained it for more than 3 years and discontinued in Sep 2013, due to time constraints and some ethical reasons. While it was under active development, it had more than a million downloads from its page on the Mozilla add-ons website.
- RESEARCH VISITS
- ◇ **London School of Economics and Political Science, UK**. (Jan 22 - Feb 6, 2010)
This was a short 2 week research visit to LSE hosted by Dr. Paolo Dini as part of the OPAALS project funded by the European Commission. The goal of the project was to investigate the theoretical and technological foundations needed to build autopoietic digital ecosystems.
 - ◇ **Tata Consultancy Services Innovation Labs, Delhi, India**. (Jun 1 - Jul 15, 2012)
During this internship, I worked in Dr. Geetika Sharma's graphics team on automatic generation of realistic head motion animation for digital avatars in virtual environments. My role included designing and implementing algorithms for automatic motion generation based on the images of an avatar and its gaze space in a virtual environment. This work led to a poster at IEEE VR-2013.
- PAPERS, POSTERS AND PREPRINTS
- ◇ **Body Schema as a Collection of Manifolds**; M Seetha Ramaiah, Amitabha Mukerjee; Poster at *International Conference on Cognition, Brain and Computation CBC-2015*. December 57, 2015. Ahmedabad, India.
 - ◇ **Visual Generalized Coordinates**; M Seetha Ramaiah, Amitabha Mukerjee, Arindam Chakraborty, Sadbodh Sharma; arXiv preprint arXiv:1509.05636, 2015.
 - ◇ **The Baby at One Month: Visuo-motor discovery in the infant robot**; Amitabha Mukerjee, M Seetha Ramaiah, Sadbodh Sharma, Arindam Chakraborty; Poster at *IEEE ICRA-2013 Workshop on Bootstrapping Structural Knowledge from Sensory-motor Experience*. May 6-10, 2013. Karlsruhe, Germany.

- ◇ **Head Motion Animation using Avatar Gaze Space**; M Seetha Ramaiah, Geetika Sharma, Ankit Vijay, Amitabha Mukerjee; Poster at *IEEE Virtual Reality VR-2013*. March 18-20, 2013. Lake Buena Vista, FL, USA.
- ◇ **Semantic 'LS' - An Approach for Personal and Private Group Information Management**; Ajay Krishnan, M Seetha Ramaiah, Vinay Kumar Jaasti, T V Prabhakar; In *ACM CHI-2008 workshop on Personal Information Management (PIM'08)*, April 5-10, 2008. Florence, Italy.
- ◇ **ArchVoc - Towards an Ontology for Software Architecture**; Lenin Babu Thummalapalli, M Seetha Ramaiah, T V Prabhakar, Rambabu D; In *IEEE ICSE-2007 workshop on Sharing and Reusing Architectural Knowledge-Architecture, Rationale, and Design Intent (SHARK/ADI'07)*; May 20-26, 2007. Minneapolis, MN, USA.

CONFERENCES
AND
WORKSHOPS
ATTENDED

- ◇ **International Joint Conference on Artificial Intelligence (IJCAI-2007)**; Jan 6-12 2007, Hyderabad, India.
- ◇ **India Software Engineering Conference (ISEC-2009)**; Feb 23-26, 2009, Pune, India.
- ◇ **Indian Workshop on Machine Learning (iWML-2013)**; Jul 1-3 2013, Kanpur, India.
- ◇ **IKDD Conference on Data Sciences (CoDS-2014)**; Mar 21-23 2014, New Delhi, India.
- ◇ **Annual Conference on Cognitive Science (ACCS-2015)**; July 5-8 2015, Kanpur, India.
- ◇ **International Conference on Cognition, Brain and Computation (CBC-2015)**; December 57, 2015. Ahmedabad, India.

PERSONAL
DETAILS

- ◇ **Date of birth**: 13 Jul 1982
- ◇ **Gender**: Male
- ◇ **Marital status**: Married
- ◇ **Nationality**: Indian
- ◇ **Place of family residence**: Hyderabad, India
- ◇ **Preferred job locations**: Hyderabad and Bangalore followed by other cities in India

DECLARATION

I hereby declare that the information provided above is genuine and accurate to the best of my knowledge.

M Seetha Ramaiah