Phani Teja Singamaneni

Contact Information

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Education

July 2012 - 2016 B.Tech (*Honours*) in Electronics and Communication Engineering
International Institute of Information Technology, Hyderabad, India
Gpa: 8.87/10

July 2016 - 2018 Master of Science in Electronics and Communication Engineering by Research
International Institute of Information Technology, Hyderabad, India
Dissertation title: "*Learning Multi-Goal Reachability in a Humanoid Robot using Deep Reinforcement Learning*"
Advisors: K. Madhava Krishna, Abhishek Sarkar
Gpa: 10/10
Gold Medallist for the Dual Degree Class of 2012 with overall Gpa of 8.97

Jan 2019 - Dec 2022 PhD candidate at **LAAS-CNRS,** affiliated with **Universite Paul Sabatier**, Toulouse
Dissertation title: "*Combining Proactive Planning and Situation Analysis for Human-Aware Robot Navigation*"
Titre de la thèse: "*Combinaison de la planification proactive et de l'analyse de situation pour la navigation robotique adaptée à l'homme*"
Advisor: Rachid Alami
Defending on December 14, 2022

Work Experience

Apr-Jun 2022 | Teaching Assistant (Vacataire) at INSA, Toulouse

Oct 2020 - Aug 2021 | Teaching Assistant (DCE) at INSA, Toulouse

Feb 2019 - 2020 | Member of MuMMER European Project
Work involving the human-aware navigation planning in the context of robot guiding visitors to different locations in a mall.

Aug 2015 - 2018 | Research Assistant at Robotics Research Center, IIIT-Hyderabad
Designing a novel reinforcement learning framework for complex tasks in Humanoid robot. Work also included working on some consulting projects and providing guidance.

May-Jul 2015 | Summer Intern at Uurmi Systems, Hyderabad
Embedded Hardware and Controller designing
Designed and developed a controller and the required embedded hardware for an autonomous car project. Work also involved developing a controller for Crazyflie quadcopter, to make it follow a Nintendo Wii remote.

2014 - 2017 | Teaching Assistant for various Courses at IIIT-Hyderabad
• Digital Logic and Processors (3 semesters) • Embedded Hardware Design
• Communication Theory - 1 • Introduction to Robotics

2015 - 2016 | Student Placement Coordinator, IIIT-Hyderabad

Publications

Interactive Social Agents Simulation Tool for Designing Choreographies for Human-Robot-Interaction Research
ROBOT2022: Fifth Iberian Robotics Conference, 2022
Watch out! There may be a Human. Addressing Invisible Humans in Social Navigation
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2022
Invisible Humans in Human-aware Robot Navigation
ICRA Workshop on Social Robot Navigation: Advances and Evaluation, 2022
KHAOS: a Kinematic Human Aware Optimization-based System for Reactive Planning of Flying-Coworker
IEEE International Conference on Robotics and Automation (ICRA), 2022
An Intelligent Human Avatar to Debug and Challenge Human-aware Robot Navigation Systems

ACM/IEEE International Conference on Human-Robot Interaction (HRI), 2022
Human-Aware Navigation Planner for Diverse Human-Robot Interaction Contexts
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2021
Simulating Intelligent Human Agents for Intricate Social Robot Navigation
RSS Workshop on Social Robot Navigation, 2021
HATEB-2: Reactive Planning and Decision making in Human-RobotCo-navigation
International Conference on Robot & Human Interactive Communication (Ro-man), 2020
Guiding task through route description in the MuMMER project (Video Submission)
ACM/IEEE International Conference on Human-Robot Interaction, 2020
Learning Dual Arm Coordinated Reachability Tasks in a Humanoid Robot with Articulated Torso
IEEE RAS International Conference on Humanoid Robots, 2018
Learning Multi-Goal Inverse Kinematics in Humanoid Robot
International Symposium on Robotics (ISR), 2018
A Deep Reinforcement Learning Approach for Dynamically Stable Inverse Kinematics of Humanoid Robots
IEEE International Conference on Robotics and Biomimetics (ROBIO), 2017
Design and Development of a Humanoid with Articulated Torso
IEEE International Conference on Robotics and Automation for Humanitarian Applications (RAHA), 2016
Stair Climbing Using a Compliant Modular Robot
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2015
An Improved Compliant Joint Design of a Modular Robot for Descending Big Obstacles
ACM Proceedings of the 2015 Conference on Advances In Robotics (AIR), 2015

Research Interests

Human-Robot Interaction, Human Aware Navigation, Reinforcement Learning, Motion planning, Multi-task Learning, Dynamics and Control, Humanoid robots, Modular robots, Manipulators.

Other Projects

Motion Transfer from Human to Humanoid
Human motion captured via Vicon motion capturing system was transferred onto a humanoid robot using Inverse Kinematic motion planning.
Path planning and collision avoidance
Devised and implemented a methodology for path planning and collision avoidance of a differential drive wheeled robot for both static as well as dynamic obstacles using RRT and velocity cones.
Finger print recognition using MKL-SVM
Developed a method for finger print recognition using Multi Kernel Learning Support Vector Machine as the base learner and different image processing techniques for feature extraction.
Hand written Digit Recognition
Implemented forward pass and back propagation of a 3 layered fully connected neural network (in MATLAB) for hand written digit recognition.
Text to emotive speech synthesis
Implemented text to speech synthesis system using Festival framework. System was then extended to synthesize speech in 5 different emotions using MATLAB.

Skills

Operating Systems:	GNU/Linux (Ubuntu, Fedora), Windows
Programming Languages:	C,C++, Embedded C, Python, MATLAB
Simulators and Tools:	MORSE, Gazebo, MSC Adams, Mujoco, SolidWorks, Blender, OpenRAVE
Platforms and Libraries:	ROS, Simulink, Arduino, AVR, Tensorflow, PyTorch, LaTeX, Github

Languages

Telugu, Hindi - Very Proficient
English - Proficient
French - Beginner

Achievements and Awards

2013-2016:	Academic Awards during five semesters (Dean's list - I, II, I, I, I).
Spring, 2015:	Research Award: Awarded for publishing competitive research at the Undergraduate level.
2014:	Winner of Electronics Hackathon held at IIIT-Hyderabad.

Leadership and workshops

Organising Committee Member, HRI 2022 Workshop on Joint Action, Adaptation, and Entrainment in Human-Robot Interaction Pulsation Coordinator, Felicity '15 (IIIT-H Techno-Cultural Fest)
Organiser, Robocamp '14 : IIIT-H Robotics Club, Microsemi (A week long workshop on robotics)

Team Leader, Electronics Hackathon ’14, IIIT-H
Team member, RoboCon, 2014, IIIT-H
Team member, CanSat, 2015, IIIT-H
Intel Workshop on CV, 2013, Bangalore
Volunteer for Photography Club, Robotics Club, Convocation ’12 and Hackathons conducted in college
Student mentor, 2014, IIIT-H