Siddharth Patki

Curriculum Vitae

Current Position

Title
Doctoral Student of Electrical and Computer Engineering - Graduate Research Assistant

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Personal: https://spatki.gitlab.io/

Education

Ph.D. in Electrical Engineering 2017 - 20__
University of Rochester, NY, USA GPA: 4.0
Advisor: Professor Thomas Howard

M.S. in Electrical Engineering 2015 - 2017
University of Rochester, NY, USA GPA: 3.83
Advisor: Professor Thomas Howard

B.Tech. Electronics Engineering 2009 - 2013
University of Pune, MH, India GPA: 8.56

Research Experience

Graduate Research Assistant (June 2016 -)
Robotics and Artificial Intelligence Laboratory, University of Rochester, Rochester, NY, USA

Developing a perception model that can generalize to diverse tasks is a key challenge in achieving intelligent robots that can perform multiple tasks. I research and develop models of robot perception for efficient grounded understanding of diverse natural language instructions in unstructured, large-scale environments. Key innovations include a novel model for language-guided adaptive perception for efficient robot manipulation in cluttered scenes, a language-guided perception model that infers semantically relevant object classifiers and sensor observations to construct task specific (compact) environment representations for efficient robot navigation in large scale unstructured environments. Experience developing perception software for building semantically rich 3D-maps of indoor/outdoor environments using robotic platforms such as Clearpath Robotics Husky with UR5 arm and Rethink Robotics Baxter. Researchs sponsors include National Science Foundation (NSF)

Undergraduate Research Intern (Jan 2014 - August 2014)
Biometrics and Image Processing Laboratory, College of Engineering Pune, MH, India

Researched and developed an OCR algorithm to recognize sparse dot matrix text printed on industrial cartons for the

task of carton segregation. Associated research involved developing pre-processing and feature extraction techniques and their performance evaluation across varied classifiers.

Publications

Conference Papers

[C1] Siddharth Patki, Ethan Fahnestock, Thomas M Howard, and Matthew R Walter. Language-guided semantic mapping and mobile manipulation in partially observable environments. In *Conference on Robot Learning*, pages 1201–1210, 2020

[C2] Siddharth Patki, Andrea F. Daniele, Matthew R. Walter, and Thomas M. Howard. Inferring compact representations for efficient natural language understanding of robot instructions. In *IEEE International Conference on Robotics and Automation*, 2019

[C3] Siddharth Patki and Thomas M. Howard. Language-guided adaptive perception for efficient grounded communication with robotic manipulators in cluttered environments. In *Proceedings of the 19th Annual Meeting of the Special Interest Group on Discourse and Dialogue*, 2018

[C4] A. Boteanu, J. Arkin, S. Patki, T. M. Howard, and H. Kress-Gazit. Robot-initiated specification repair through grounded language interaction. In *AAAI Fall Symposium on Natural Communication for Human-Robot Collaboration*, November 2017

[C5] Siddharth Patki, Madhuri Joshi, and Abhishek Ninad Kulkarni. In *Proceedings of the 2015 International Conference on Industrial Instrumentation and Control (ICIC)*, pages 777–782. IEEE, 2015

Honors and Awards

Hajim School of Engineering Dean's Fellow 2017
Scholar, New York State Center of Excellence in Data Science 2016

Teaching Experience

Teaching Assistant

ECE447 Digital Image Processing	University of Rochester	Spring 2019, 2018
ECE114 Introduction to C/C++	University of Rochester	Spring 2016, 2019, Fall 2019

Professional Service

Program Committee: Conference on Robot Learning (2020)

Reviewer: Robotics: Science and Systems (2020), IEEE/RSJ International Conference on Intelligent Robots and Systems (2019), IEEE International Conference on Robotics and Automation (2019), Workshop on Spatial-Semantic Representations in Robotics at Robotics: Science and Systems (2017)

Science Communication & Outreach

Demonstrator, Rochester Museum and Science Center 2016, 2019

Extra Curricular Skills

Water color artist
Badminton Player
- First place - Rochester Open 2017
- University Team Captain 2010 - 2013