

GAUTAM SALHOTRA

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 Résumé  Updated September 2022

PhD candidate with interest in optimization & learning for robot manipulation tasks

SKILLS

Interests: Inductive Biases in Learning, Optimization, Robotic Manipulation, Control Theory
Robots: Robot Arms (e.g. UR10, Franka Panda), wheeled manipulators, (pneumatic) soft robots
Programming: Python, C++, Julia, bash, ROS, git, PyTorch, Tensorflow, MATLAB, \LaTeX

EDUCATION

Graduate Student, PhD Computer Science (Robotics) Ongoing
University of Southern California **Advisor:** Dr. Gaurav Sukhatme

MS, Computer Science (Robotics and Perception) '18
College of Computing, Georgia Institute of Technology **GPA:** 4/4

MS, Mechanical Engineering '12
The University of Texas at Austin **GPA:** 4/4

BTech + MTech (Dual Degree), Mechanical Engineering '10
Indian Institute of Technology Bombay **GPA:** 8.59/10

SELECTED WORK EXPERIENCE

Graduate Researcher, Robotic Embedded Systems Lab (RESL) Los Angeles CA, Ongoing
- Reinforcement learning with strong inductive biases, deformable object manipulation, robot locomotion, and adaptive sampling.

Applied Scientist Intern, Amazon Robotics MA, Summer '22
- Focussed on developing manipulation policies for delicate items.

Robotics Research Intern, Bosch Research Bay Area CA, Summer '19
- Reinforcement Learning for peg insertion tasks (environments, learning and classical control methods)
- Developed ROS package to deploy a learned algorithm, tested on robot hardware.

Senior Software Controls Engineer, Symbotic MA, '16 - '18
- Implement object manipulation algorithms to pick & place cases in automated storage and retrieval systems
- Work on low-level controllers for actuator performance and stall detection

ACADEMIC PUBLICATIONS

See  Google Scholar for a full list. * means equal contribution.

Selected Publications

- [1] **Gautam Salhotra***, I-Chun Arthur Liu*, Marcus Dominguez-Kuhne, and Gaurav S. Sukhatme. Learning Deformable Object Manipulation from Expert Demonstrations. *IEEE Robotics and Automation Letters (RA-L) and IROS*, 2022.
- [2] **Gautam Salhotra**, Shashank Hegde, Sumeet Batra, Peter Englert, and Gaurav S. Sukhatme. Guided learning of robust hurdling policies with curricular trajectory optimization. In *Southern California Robotics Symposium*, 2022.
- [3] **Gautam Salhotra***, Christopher E. Denniston*, David A. Caron, and Gaurav S. Sukhatme. Adaptive Sampling using POMDPs with Domain-Specific Considerations. In *2021 IEEE International Conference on Robotics and Automation (ICRA)*, pages 2385–2391, 2021.

- [4] Ali Agha, Kyohei Otsu, Benjamin Morrell, et al. NeBula: Quest for Robotic Autonomy in Challenging Environments; TEAM CoSTAR at the DARPA Subterranean Challenge. *Journal of Field Robotics*, abs/2103.11470, 2021, 2103.11470.
- [5] Jun Yamada, Youngwoon Lee, **Gautam Salhotra**, et al. Motion Planner Augmented Reinforcement Learning for Robot Manipulation in Obstructed Environments. In *Conference on Robot Learning*, Nov 2020.

TALKS AND PRESENTATIONS

- Learning Deformable Manipulation from Expert Demonstrations
2nd Workshop on Representing and Manipulation Deformable Objects @ ICRA May '22
- USC Dept of Computer Science Poster presentations Mar '22
- Invited lecture, curricular trajectory optimization, CS 545 at USC Nov '21
- Robots: Past, Present, and Future. Opening talk @ USC Robotics week Apr '21
- Task and Motion Planning, invited lecture, CS 545 at USC Nov '19

SERVICE

Professional Service

- Reviewed papers for ISER 2020, ICRA 2021, Autonomous Robots (2022), IEEE RAL (2022) and workshops.
- ICRA 2021 chair for session on “Field Robotics: Control” May '21
- Reviewed grant proposals annually for the US Department of Energy, office of SBIR/STTR '21 - '22
- Panelist on advising first year CS PhD students on internships Nov '19
- Panelist on advising undergraduate REU students on graduate student life Jul '21, Jun '22

University Service

- Mentor at USC Viterbi Graduate Mentorship Programming Spring '22 - Present
- Volunteer, USC VAST K-12 outreach, to teach robotics & programming Dec '18 - Present
- Volunteer, USC Robotics Open House (outreach to school children) Apr '19, Apr'21
- Volunteer, Girls Empowerment Day USC: Encouraging high school girls to pursue robotics Dec '19

Students Advised

- **Angel Ivan Gonsalez Garcia** Fall '18 - Spring '19
- Master's student at USC CS, graduated 2019.
- **Karkala Shashank Hegde** Summer '21
- Master's student in USC EE, graduated 2021. After graduation: PhD student at USC RESL.
- **Arthur I-Chun Liu** Summer '21 - Present
- Master's student in USC CS, graduating 2023 (expected).

AWARDS AND HONORS

- Amazon Research Award 2018
- DAAD WISE Scholarship 2008, by German Academic Exchange Service, for internships in Germany '08
- Indian Institute of Technology Joint Entrance Exam (JEE): 858th out of 400,000 students nationwide '05
- Certificate of Excellence in Mathematics in Grade XII, State Govt. of Maharashtra, India '04
- State of Maharashtra High School Scholarship (HSS), 29th in state '99