GAUTAM SALHOTRA

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Résumé   Updated October 2023

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 (URs, Panda, etc.), soft robots (pneumatic)
Programming:	Python, C++, Julia, bash, ROS, git, PyTorch, Tensorflow, MATLAB, LaTeX

EDUCATION

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

MS, Computer Science (Robotics and Perception)   '18
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

PhD resident, Intrinsic (Alphabet)   Bay Area CA, Ongoing
- Robot learning for dexterous manipulation tasks.   **Host:** Stefan Schaal

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

Applied Scientist Intern, Amazon Robotics   MA, Summer '22
- Developed manipulation policies for delicate items, as part of the AR Sparrow project.

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*, and Gaurav S. Sukhatme. Learning Robot Manipulation from Cross-Morphology Demonstration. In *Conference on Robot Learning (CoRL)*, 2023.

[2] Christopher E. Denniston, **Gautam Salhotra**, Akseli Kangaslahti, David A Caron, and Gaurav S. Sukhatme. Learned Parameter Selection for Robotic Information Gathering. *International conference on Intelligent Robots and Systems (IROS)*, 2023.

[3] Open X-Embodiment Collaboration, Abhishek Padalkar, Acorn Pooley, et al. Open X-Embodiment: Robotic learning datasets and RT-X models. https://arxiv.org/abs/2310.08864, 2023.

[4] **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.

[5] **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.

[6] 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.

[7] Jun Yamada, Youngwoon Lee, **Gautam Salhotra**, et al. Motion Planner Augmented Reinforcement Learning for Robot Manipulation in Obstructed Environments. In *Conference on Robot Learning (CoRL)*, Nov 2020.

TALKS AND PRESENTATIONS

- Learning Deformable Manipulation from Expert Demonstrations
  3rd Workshop on Robotic manipulation of deformable objects (ROMADO-SI) @ IROS   Nov '22
  2nd Workshop on Representing and Manipulation Deformable Objects @ ICRA   May '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, 2023), ICRA (2021, 2023), Autonomous Robots (2022), IEEE RAL (2022, 2023) 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

- Volunteer, USC VAST K-12 outreach, to teach robotics & programming   '18-'20

- 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

AWARDS AND HONORS

- Amazon Research Award. Proposal "Watch, Practice, Learn, Do: Unsupervised Learning of Robust and Composable Robot Motion Skills by Fusing Expert Demonstrations with Robot Experience"   '18

- 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