

GAUTAM SALHOTRA

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🎓 Résumé 📅 Updated October 2024

Learning for dexterous robotic manipulation

SKILLS

Interests: Inductive Biases in Learning, Robotic Manipulation, Control Theory
Programming: Python, C++, Julia, bash, ROS, git, PyTorch, Tensorflow, MATLAB, L^AT_EX

EDUCATION

PhD, Computer Science (Robotics) '24
Reinforcement learning with inductive biases, deformable object manipulation, and adaptive sampling.
Thesis: Accelerating Robot Manipulation using Demonstrations **Advisor:** Gaurav Sukhatme
University of Southern California

MS, Computer Science (Robotics and Perception) '18
Georgia Institute of Technology

MS, Mechanical Engineering '12
The University of Texas at Austin

BTech + MTech (Dual Degree), Mechanical Engineering '10
Indian Institute of Technology Bombay (IIT Bombay)

SELECTED WORK EXPERIENCE

Robotics R&D, Intrinsic (Alphabet) Bay Area CA, '24 - Present
PhD AI resident, Intrinsic (Alphabet) **Host:** Stefan Schaal, '23 - '24
- Robot learning for dexterous manipulation tasks.

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.

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] 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.
- [3] **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.
- [4] **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.

- [5] 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.
- [6] 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

- **Accelerating Robot Manipulation using Demonstrations**
Thesis defense @ USC Viterbi School of Engg. Dec '23
Safe & Intelligent Autonomy (SIA) lab USC Nov '23
- **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
- **Curricular trajectory optimization**, invited lecture to 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 CoRL, RA-L, ICRA, ISER, ISRR, Autonomous Robots, IROS, RO-MAN and workshops.
- ICRA 2021 chair for session on “Field Robotics: Control” '21
- Reviewed grant proposals annually for the US Department of Energy, office of SBIR/STTR '21 - '22
- Founding member, USC Robotics Seminar (URoS) '23 - Present
- Founder & editor, USC RASC Blog for robotics '24 - Present
- 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

- ICRA 2024 Best Paper Award for [2]. '24
- 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