Rhea Malhotra

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EDUCATION

STANFORD UNIVERSITY <div align="right">Stanford, CA</div>
M.S. in Computer Science | GPA 3.93 <div align="right">June 2026</div>
Advisors: Prof. Jeannette Bohg & Prof. Oussama Khatib

STANFORD UNIVERSITY <div align="right">Stanford, CA</div>
B.S in Computer Science, Minor in Mechanical Engineering | GPA 3.94 <div align="right">June 2025</div>
<u>Thesis</u>: Robot Learning in Unseen Environments – **Firestone Medal for Excellence in Research** for best thesis in Computer Science Department
<u>Teaching</u>: Head CA for Principles of Robot Autonomy (CS237A), Intro to Robotics (CS223A), Experimental Robotics (CS225A)

MORAVIAN ACADEMY <div align="right">Bethlehem, PA</div>
Valedictorian | US Presidential Scholar | World Science Scholar | GPA: 4.34 <div align="right">June 2020</div>

RESEARCH EXPERIENCE

Interactive Robot Perception Learning (IPRL) Lab <div align="right">Stanford, CA</div>
Research Assistant advised by Prof. Jeannette Bohg
- Led two independent research initiatives on sample-efficient generalization and task-chaining for mobile manipulation for TidyBot++.
- Developed HoMeR as a hybrid imitation and whole-body control framework. Submitted to ICRA 2025.
- Leverage VLM-conditioned salient action waypoints for generalization to unseen scene distractors.
- Investigate visual inpainting and scene augmentation to generalize single-task policies; study task-chaining as an open-vocabulary problem using a fixed set of single-task policies.

Khatib Lab, Stanford Robotics Center <div align="right">Stanford, CA</div>
Research Assistant advised by Prof. Oussama Khatib
- Built a real-time humanoid motion-mapping pipeline retargeting human skeleton data (OptiTrack) onto HPR4C and Toro humanoids.
- Analyzed musculoskeletal energy consumption using Lagrangian and kinetic formulations. Developed SynSculptor: an interface for motion-sequence generation and stylistic tuning, and fine-tuned MotionGPT outputs for language-conditioned humanoid motion generation.
- Directed technical demos for 500+ VIPs at the Stanford Robotic Center's launch
- *Humanoid Motion Scripting with Postural Synergies* (**First author publication** @ Humanoids 2025)

Intelligence through Robot Interaction at Scale (IRIS) Lab <div align="right">Stanford, CA</div>
Undergraduate Researcher advised by Prof. Chelsea Finn
- Created *Self-Guided Action Diffusion* (RSS Workshop 2025), a diffusion denoising framework conditioned on prior action predictions that improved success by up to 70% in tight sampling budgets.
- Built dynamic versions of canonical robotics setups (RoboCasa, PyBullet) to benchmark tasks such as moving-target PushT.
- Adapted Self-GAD into NVIDIA's N1 foundation model codebase, turning a generalist model into a task-specialized policy.
- Implemented efficient reinforcement-learning strategies using latent delta action chunks to steer exploration for imitation-bootstrapped RL with fewer steps.

Autonomous Systems Lab <div align="right">Stanford, CA</div>
Undergraduate Researcher advised by Prof. Marco Pavone
- Led research on dynamic trajectory forecasting and edge-case reasoning for autonomous vehicles using heterogeneous data and novel RL inference methods.

Memorial Sloan Kettering Cancer Center   New York, NY
Computational Biology Research Fellow with Dr. Sohrab Shah
- Optimized cancer evolution simulator for chromosomal instability in breast and ovarian carcinoma at single-cell resolution (PLOS Computational Biology 2025).

Massachusetts General Hospital   Boston, MA
Research Engineer in Computer Vision
- Developed CT/MRI contraband detection tools for body packers (Emergency Radiology, 2021)
- Conducted radiology analysis of COVID-19, applying pulmonary blood-volume flow analysis and computer vision to sequential scans of recurrent or comorbid patients.

Broad Institute, Harvard Medical School   New York, NY
Regeneron Scholar + Research Science Institute (RSI)
- Conducted single-cell multi-omics of mitochondrial DNA disorders (Nature Genetics, 2023)
- Investigated Pearson syndrome, a rare pediatric mitochondrial disorder, addressing challenges of genomic heterogeneity and phenotype correlation by extrapolating insights from limited and inconsistent variant datasets.

INDUSTRY EXPERIENCE

Greenoaks Capital   San Francisco, CA
Robotics Technical Consultant   January 2025 - ongoing
- Analyze Seed - Series A robotics startups' technical propositions and deliver briefings on robotics fundamentals to support investment decisions. Provide market overviews of the technical landscape.
- Produced weekly technical briefings translating complex robotics/AI concepts into clear insights for non-technical partners. Developed fluency in the business side of robotics.

Hinge Health   San Francisco, CA
Software Engineer   May - August 2022
- Computer vision developer for remote health monitoring through human-pose energetic analysis.
- Implemented state estimation pipelines from iPhone sensors to support vision-based assessment of musculoskeletal therapy progress and energy expenditure.

Pfizer   Cambridge, MA
Research Engineer   May 2020 – August 2021
- Research on COVID-19 Vaccine development and Cardiometabolism Chronic Disorders division.
- Developed AAVs for skeletal-muscle-specific AMPK activation in heart failure with preserved ejection fraction; performed 3D optics, fluorescence, and analytics for drug-target strategies in vivo.

HONORS & AWARDS

• Firestone Medal for Excellence in Research   **• US Presidential Scholar**
(Stanford CS Department's highest distinction)   • World Science Scholarship
• ISEF Grand Award Winner   • Society of Women's Engineers Award
• Regeneron STS Finalist   • Kanako Miura Women in Robotics Award
• Research Science Institute (RSI) Scholar   • Best Project Stanford CS224N - Lyricade

PUBLICATIONS

[7] Sundaresan, P., **Malhotra, R.**, Miao, P., Yang, J., Wu, J., Hu, H., Antonova, R., Englemann, F., Sadigh, D., Bogh, J. (2025). HoMeR: Learning in-the-wild mobile manipulation via hybrid imitation and whole-body control. arXiv preprint arXiv:2506.01185. https://arxiv.org/abs/2506.01185

[6] **Malhotra, R.**, Liu, Y., & Finn, C. (2025, June 17). Self-guided action diffusion. *Proceedings of Robotics: Science and Systems (RSS 2025): Second Workshop on Out-of-Distribution Generalization in Robotics.* arXiv:2508.12189. https://arxiv.org/abs/2508.12189

[5] **Malhotra, R.**, Chong, W., Cuan, C., & Khatib, O. (2025). Humanoid motion scripting with postural synergies. *Proceedings of the IEEE-RAS International Conference on Humanoid Robots (Humanoids 2025).* arXiv:2508.12184. https://arxiv.org/abs/2508.12184

[4] Dunphy, A., Sun, S., **Malhotra, R.**, Alexopoulos, V., & Skaling, L. (2024). Kelp forest conservation with an autonomous underwater vehicle. *Naval Engineers Journal, 136*(3), 271–278. https://bonotom.com/flipbook/naval-engineers-journal-fall-2024/#naval-engineers-journal-fall-2024/272

[3] **Malhotra, R.**, & Singh, A. (2021). Imaging of drug mules. *Emergency Radiology, 28*(4), 809–814. https://doi.org/10.1007/s10140-021-01950-5

[2] Lareau, C. A., Dubois, S. M., Buquicchio, F. A., Hsieh, Y. H., Garg, K., **Malhotra, R.**, ... & Sankaran, V. G. (2023). Single-cell multi-omics of mitochondrial DNA disorders reveals dynamics of purifying selection across human immune cells. *Nature Genetics, 55*(7), 1198–1209. https://doi.org/10.1038/s41588-023-01486-6

[1] Dinh, K. N., Vázquez-García, I., Chan, A., **Malhotra, R.**, Weiner, A., McPherson, A., & Tavaré, S. (2025). CINner: Modeling and simulation of chromosomal instability in cancer at single-cell resolution. *PLOS Computational Biology, 21*(4), e1012902. https://doi.org/10.1371/journal.pcbi.1012902

OUTREACH & LEADERSHIP

Stanford Women in Computer Science   Stanford, CA
- Executive Board and Director of Professional Development.
- Organized Silicon Valley industry networking events and curated women-in-tech speaker panels to mentor 150+ students each quarter.

Stanford Student Robotics + RoboSub   Stanford, CA
- Executive Board and Director of Funding
- Secured cross-departmental funding and project sourcing across CS, ME, and EE for Stanford Student Robotics projects sourced from industry collaborations.
- Led Software Team of RoboSub: autonomous underwater vehicle in collaboration with MBARI for marine ecosystem research and eDNA data collection.

Society of Women in Engineering   San Francisco, CA
- STEM outreach programs for high-school and middle-school girls to increase participation in engineering pathways.

TED Talks   Bethlehem, PA
- Speaker, Rethinking the Age of Science | TEDX

NPR Philadelphia   Philadelphia, PA
- Radio Show Original Host and Founder of The Teen Scientist. Created and hosted a live radio show featuring conversations with researchers, professors, and industry leaders in technology and academia to inspire youth engagement in STEM.

INTERESTS + SKILLS

Technical: Programming (Python, C++, ROS, PyTorch, Tensorflow), Robotics Simulation (Gazebo, MuJoCo, PyBullet), Networking, Dev Tools (Git, Docker, Linux), Vision, Perception
Language: Hindi, Punjabi, Spanish, Turkish
Art Portfolio: Ceramics