Zhuoran Li

M.S. student in Computer Science, Stanford University
davidzrl@stanford.edu | Homepage | Google Scholar

Education

Stanford University **Sep 2026 – Present**
M.S. in Computer Science *Stanford, California*

National University of Singapore **Aug 2019 – Jun 2024**
B.Sc. (Honours) in Data Science and Analytics *Singapore*

- Highest Distinction. GPA 4.77/5.00.
- Selected coursework included AI Planning and Decision Making (A+), Computer Vision and Pattern Recognition (A+), Machine Learning (A+), Natural Language Processing (A), Intelligent Robots (A), and Bayesian Statistics (A).

Research Interests

I am broadly interested in **robot learning**, **planning**, and **agentic robotics**. My goal is to build general-purpose robots that can carry out complex, long-horizon tasks and adapt their plans when conditions change. I'd like these robots to take on work ranging from routine household chores to hazardous jobs on the factory floor. I favor simple methods that scale with data and compute.

Publications

[*] Equal Contribution [†] Equal Advising

[1] Learning to Plan with Natural-Language World Models from Human Egocentric Videos
Zhuoran Li, Tasha Kim, Jillian Fisher, Chan Young Park, Yejin Choi, Weiyu Liu[†], David Hsu[†], Jiajun Wu[†].
Under Review, 2026.

[2] D^{3}Fields: Dynamic 3D Descriptor Fields for Zero-Shot Generalizable Rearrangement
Yixuan Wang[*], Mingtong Zhang[*], **Zhuoran Li**[*], Tarik Kelestemur, Katherine Driggs-Campbell, Jiajun Wu, Li Fei-Fei, Yunzhu Li.
Conference on Robot Learning (CoRL), 2024. Oral Presentation.

[3] RoboEXP: Action-Conditioned Scene Graph via Interactive Exploration for Robotic Manipulation
Hanxiao Jiang, Binghao Huang, Ruihai Wu, **Zhuoran Li**, Shubham Garg, Hooshang Nayyeri, Shenlong Wang, Yunzhu Li.
Conference on Robot Learning (CoRL), 2024.
VLMNM Workshop, ICRA 2024 — Best Paper Award Nominee
VLADR Workshop, CVPR 2024 — Oral Presentation

Research Experience

Stanford University & National University of Singapore **Jun 2025 – Sep 2026**
Research Assistant, Stanford Vision and Learning Lab and Adaptive Computing Lab
Advised by Prof. Jiajun Wu, Prof. David Hsu, and Prof. Weiyu Liu.

- Led Planning in Abstract Worlds (PAW) as an independent researcher. We learned a natural-language abstract world model from unlabelled egocentric videos and used it to **reconstruct state–action supervision**. The same world model **conditions the planner** during supervised fine-tuning and inference, enabling **planning beyond demonstrated procedures** by recombining familiar actions to reach a given goal.
- On held-out CALVIN long-horizon tasks with goal-only instructions, PAW solved **57/60 (95%)** versus 42/60 (70%) for the fine-tuned Qwen3-VL planner baseline, a gain of **25 percentage points**.
- Against the same baseline, PAW raised the mean LLM-judged score from 4.43 to **4.75/5** on real-world test plans. Across three complex, long-horizon kitchen task domains, intervention-free completion rose from 24% to **78%** for new action sequences and from 11% to **60%** for new strategies.

National University of Singapore **Sep 2023 – May 2024**
Undergraduate Research Assistant, GLOW.AI
Advised by Prof. Bryan Kian Hsiang Low.

- Designed and evaluated language-model planners for autonomous driving and household manipulation. My honours thesis examined how these planners choose actions under uncertainty.

University of Illinois Urbana-Champaign **Oct 2023 – Feb 2024**
Undergraduate Research Assistant, Robotic Perception, Interaction, and Learning Lab
Advised by Prof. Yunzhu Li.

- Helped develop RoboEXP, which uses interactive exploration to construct an action-conditioned scene graph. Supported deployment, evaluation, and visualization in OmniGibson and SAPIEN.
- Across five real-world exploration tasks, RoboEXP reconstructed the exact scene graph in **37/50 trials (74%)**, versus 6/50 (12%) for GPT with human-executed actions, a gain of **62 percentage points**.

Stanford University **Apr 2023 – Sep 2023**
Undergraduate Visiting Research Intern, Stanford Vision and Learning Lab
Advised by Prof. Jiajun Wu and Prof. Yunzhu Li.

- Co-developed D^3Fields for robotic rearrangement from goal images. Built household manipulation tasks in OmniGibson and evaluated the representation in simulation and on a physical robot.
- Built the 3D representation from four RGB-D views in **0.166 seconds** on an A6000 GPU, versus 88.379 seconds for F3RM (about $532\times$ faster). On the Dense Object Nets dataset, D^3Fields achieved comparable correspondence precision and recall with **4 views instead of 50**.

National University of Singapore **Jan 2021 – Aug 2021**
Undergraduate Research Assistant, Adaptive Computing Lab
Advised by Prof. David Hsu.

- Helped design and test a long-horizon visual navigation system for a Boston Dynamics Spot robot. Collected imitation-learning data on elevator use and navigation around pedestrians and obstacles.

Selected Honors & Awards

- Highest Distinction Honors, NUS
- Oral Presentation at CoRL 2024
- Best Paper Nomination at ICRA 2024 VLMNM Workshop
- Certificate of Best Project Award in CS4246: AI Planning and Decision Making (graduate-level course), NUS
- Certificate of Outstanding Performance & Top Students in CS4243: Computer Vision and Pattern Recognition (graduate-level course), NUS
- Dean's List, NUS
- Science & Technology Undergraduate Scholarship (an undergraduate full scholarship offered to support outstanding students), NUS and Singapore Ministry of Education

Teaching Experience

CS3244, Machine Learning *Teaching Assistant, NUS* **Aug – Dec 2021**
Led weekly tutorials for 25 undergraduates and prepared exercises on linear models, support vector machines, tree-based methods, and deep learning.

CS2040, Data Structures and Algorithms *Teaching Assistant, NUS* **Aug – Dec 2020**
Led weekly labs for 22 undergraduates and wrote programming exercises on data structures, graph algorithms, searching, and sorting.