Huy Ha

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Google Scholar

Education

Stanford University — Palo Alto, CA
Student of New Faculty, Electrical Engineering — Aug 2023 - Present

Columbia University — New York, NY
Ph.D. in Computer Science, GPA: 4.00 — Sep 2021 - Present

Columbia University — New York, NY
B.S. in Computer Science, GPA: 3.86, Cum Laude — Sep 2017–May 2021

- *Selected Coursework*: Computational Learning Theory, Computational Complexity, Quantum Computing, Physically Based Computer Animation, Computer Graphics, 3D UI and Augmented Reality, Operating Systems, Representation Learning, Foundations of Graphical Models, Computation and the Brain, Evolutionary Computation, Causal Inference
- *Dean's List*: Fall 2017, Spring 2018, Spring 2019, Fall 2019, Fall 2020, Spring 2021

Publications

Self-Improving Autonomous Underwater Manipulation
Ruoshi Liu, **Huy Ha**, Mengxue Hou, Shuran Song, Carl Vondrick
2025 International Conference on Robotics and Automation, Webpage

UMI on Legs: Making Manipulation Policies Mobile with Manipulation-Centric Whole-body Controllers
Huy Ha*, Yihuai Gao*, Zipeng Fu, Jie Tan, Shuran Song
2024 Conference on Robot Learning, ***Spotlight Presentation*** *2024 Whole-body Control and Bimanual Manipulation Workshop*, *2024 X-Embodiment Workshop*, Webpage

Dynamics-Guided Diffusion Model for Robot Manipulator Design
Xiaomeng Xu, **Huy Ha**,Shuran Song
2024 Conference on Robot Learning, ***Best Machine Learning Paper*** *2024 Morphology-Aware Policy and Design Learning Workshop*, Webpage

DROID: A Large-Scale In-the-Wild Robot Manipulation Dataset
Alexander Khazatsky*, Karl Pertsch* et al.
2024 Robotics: Science and Systems, Webpage

PaperBot: Learning to Design Real-World Tools Using Paper
Ruoshi Liu, Junbang Liang, Sruthi Sudhakar, **Huy Ha**, Cheng Chi, Shuran Song, Carl Vondrick
2024 Pre-print, Webpage

Scaling Up and Distilling Down: Language-Guided Robot Skill Acquisition
Huy Ha, Pete Florence, Shuran Song
2023 Conference on Robot Learning, ***Oral Presentation*** *2023 LangRob Workshop*, ***Oral Presentation*** *2023 Cognitive Science and Robot Learning Workshop*, Webpage

Motion Prediction For Chaotic Scenes in a Physical World
Ishaan Chandratreya, **Huy Ha**, Simon Stent , Pavel Tokmakov, Shuran Song, Carl Vondrick
2023 Pre-print, Patent Pending

Cloth Funnels: Canonicalized-Alignment for Multi-Purpose Garment Manipulation
Alper Canberk, Cheng Chi, **Huy Ha**, Benjamin Burchfiel, Eric Cousineau, Siyuan Feng, Shuran Song
2023 International Conference on Robotics and Automation, Webpage

Bag All You Need: Learning a Generalizable Bagging Strategy for Heterogeneous Objects
Arpit Bahety, Shreeya Jain, **Huy Ha**, Nathalie Hager, Benjamin Burchfiel, Eric Cousineau, Siyuan Feng, Shuran Song
2023 International Conference on Intelligent Robots and Systems, Webpage

Semantic Abstraction: Open-World 3D Scene Understanding from 2D Vision-Language Models
Huy Ha, Shuran Song
2022 Conference on Robot Learning, Webpage

FlingBot: The Unreasonable Effectiveness of Dynamic Manipulations for Cloth Unfolding
Huy Ha, Shuran Song
2021 Conference on Robot Learning, **Oral Presentation**, **Best System Paper** Webpage

Learning a Decentralized Multi-arm Motion Planner
Huy Ha, Jingxi Xu, Shuran Song
2020 Conference on Robot Learning, Webpage

Fit2Form: 3D Generative Model for Robot Gripper Form Design
Huy Ha*, Shubham Agrawal*, Shuran Song
2020 Conference on Robot Learning, Webpage

*indicates equal contribution

Honors and Awards

Best Machine Learning Paper, Morphology-Aware Policy and Design Learning Workshop	Nov 2024
Ph.D. Communication Competition Finalist, Amazon Robotics	Oct 2024
Ph.D. Computer Science Service Award, Columbia University	May 2023
Best System Paper Award, Conference on Robot Learning	Nov 2021
Theodore R. Bashkow Award, Columbia University	Apr 2021
Dean's Fellow, Columbia University	Feb 2021
Bonomi Summer Scholars, Columbia University	May 2020
National Highest Score in Mathematics, Cambridge International A Levels	June 2017
National Highest Composite Score, Cambridge International A Levels	June 2016
Best Presentation Paper, International Symposium on Frontiers in Materials Science	Nov 2016
Silver, UK Maths Challenge Senior	Oct 2016

Invited Talks

RoboPIL, Columbia University	New York, NY, Feb 2025
University of Macau	Macau, China, Feb 2025
Robotics Labs, Northeastern University	Boston, MA, Oct 2024
Google DeepMind	Mountain View, CA, Oct 2024
Stanford Vision Lab	Palo Alto, CA, Sep 2024
Towards Generalist Robots Workshop, CoRL 2023	Atlanta, GA, Nov 2023
Google DeepMind	Mountain View, CA, Aug 2023
GRASP Lab	Philadelphia, PA, Jan 2022
Columbia Robotics Club	New York, NY, Oct 2021

Research Experience

Robotics & Embodied Artificial Intelligence Lab (REAL) — Palo Alto, CA, New York, NY
Advised by Professor Shuran Song — Oct 2019 - Present

Computer Graphics and User Interfaces Laboratory — New York, NY
Supervised by Carmine Elvezio — Jan 2019-May 2019

Vietnam National University — Hanoi, Vietnam
Supervised by Professor Long Dang — Apr 2016 - Nov 2016

Industry Experience

Altair Engineering — Troy, Michigan
Virtual Interface Development Intern, supervised by Dennis Ward — May 2019 - Aug 2019

- Lead research on game engines for simulation-driven design software R&D
- Developed a collaborative hybrid desktop-VR CFD post-processor using Unity (C#) and Unreal (C++)
- Optimized graphics pipeline to support large CFD meshes ($\approx$ 5 million vertices) at 60 fps
- Designed client-server architecture for asynchronous data loading and synchronous interactions and visualizations

Def Method — New York, NY
Strategy and Marketing Intern, mentored by Julia Macalaster — May 2018 - Aug 2018

- Lead company's rebranding efforts and conducted client interviews, resulting in brand guideline and design materials (e.g: logos, business cards, websites)
- Train marketing staff in creative and technical skills for producing professional videos and photos

Academic Service

Reviewer, ICRA (2021, 2022, 2023, 2024), IROS (2022,2023,2024), ICVS (2023), CoRL (2022, 2023, 2024), RSS (2025), SIGGRAPH (2025), IEEE T-RO, IEEE RA-L

Workshop Organization

- Brains & Brawns: Robot Hardware-Aware Intelligence, RSS 2025

Teaching

Teaching Assistant — July 2021 - Present
Data Driven Decision Making — Columbia University

- Write lecture notes, survey literature, and design assignments on the theory and applications of bandit algorithms, off-policy evaluation, and dynamic programming

Teaching Assistant — Fall 2021
Topics in Robot Learning — Columbia University

- Discuss papers with students and mentor student's course final research projects

Teaching Assistant — Fall 2020
Physically Based Computer Animation — Columbia University

- Assisted in designing and grading final exam
- Held weekly office hours
- Lead efforts in refactoring and documenting homeworks and automated grading scripts
- Organized collision detection algorithm design competition on Google Cloud

Teaching Assistant — Spring 2019 - Fall 2020
Artificial Intelligence's MicroMasters: Animation and CGI Motion — Columbia University Edx

- Lead development of new course material and resources
- Onboard and mentor new TA members
- Support learners through the online discussion forum

Course Projects

Maximal Extractable Value on L2 Dec 2021
Huy Ha, Vasiliki Vlachou, Quintus Kilbourn, Cesare De Michellis, PDF, Code COMS 6998: Foundations of Blockchains

- Quantification and Analysis of MEV on Optimism, a Layer 2 for Ethereum

Neural Temporal Radiance Fields Dec 2020
Huy Ha*, Su-ji Park* COMS 6998: Representation Learning

- Developed an algorithm for encoding dynamic and visual priors into implicit 4D representations for novel view synthesis and dynamics prediction with meta-learning

Deep Bisimulation Dreaming: Combating Distractions with State Abstractions Dec 2020
Huy Ha, Sian Lee-Kitt, William Zheng, PDF STCS 6701: Foundations of Graphical Models

- Studied probabilistic embedding with bisimulation metrics in the context of latent space dreaming for sample efficient and generalizable reinforcement learning

Temporal Difference Learning Is Not All You Need Dec 2020
Huy Ha, Sian Lee-Kitt, PDF COMS 6998: Computation and the Brain

- Reviewed the role of dopamine in probabilistic computations and model-based learning in biological agents

Coevolution of Morphology and Policy Implicit Neural Functions Dec 2019
Huy Ha, Project webpage MECS 4510: Evolutionary Computation

- Studied neural networks as genotypes, their mutation operators, and mechanisms for encoding priors for morphology and policy evolution of soft robots
- Achieved robots with complex hopping gaits achieving running speeds up to 1.10 m/s

GAN for Pseudo-Lidar generation in 3D Object Detection Dec 2019
Rahul Subbiah, **Huy Ha** COMS 6998: Topics in Robotic Learning

- Extended state of the art Pseudo-Lidar approaches with Generative Adversarial Networks
- Improved downstream object detection accuracy for cars in the KITTI benchmark

Quantum Support Vector Machines Nov 2019
Huy Ha*, Haley So* IEOR 8100: Seminar on Quantum Computing

- Lectured on techniques to improve Quantum SVM complexity over classical SVMs
- Implemented Quantum SVM using Qiskit

M3ch Planet May 2019
Huy Ha, Matthew Chan, Mandeep Bhutani, Conder Shou, Mohammed Abedelmalik COMS 4172: 3D UI and AR

- Lead a team of 5 developers in an augmented reality multiplayer strategy action game using Vuforia and Unity
- Designed game's 3D models and animations in Blender

*indicates equal contribution.