Hany Hamed

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Researching generalization in reinforcement learning to build agents that adapt robustly to unseen, diverse settings

EDUCATION

Korea Advanced Institute of Science & Technology (KAIST), South Korea — Aug 2022 — Aug 2024
Master of Science in Computer Science — Cumulative GPA: 3.95/4.30
Thesis Title: "Strategic Dreaming in MBRL: Leveraging State Space Structure for Sample-Efficient Generalist Agents"
Supervisor: Prof. Sungjin Ahn

Innopolis University, Russia — Aug 2018 — Aug 2022
Bachelor of Computer Science (Robotics track) — Cumulative GPA: 4.68/5.00
Thesis Title: "Learning behavioral strategies for multi-robot system in a predator-prey environment"
Supervisor: Prof. Alexandr Klimchik & Consultant: Prof. Stefano Nolfi

EXPERIENCE

Artificial and Mechanical Intelligence Lab, IIT — Genoa, Italy
Research Fellow (PI: Prof. Daniele Pucci & co-PI: Giulio Romualdi & Giuseppe L'Erario) — March 2025 — Present

- Developing torque-control humanoid locomotion policies using reinforcement learning.
- Designing and implementing RL experiments for ErgoCub with IsaacLab.
- Building a Sim-to-Real transfer framework to enable robust humanoid locomotion.

University of Alberta & Amii — Remote
Research Assistant (PI: Prof. Rupam Mahmood (UoA) & Colin Bellinger (NRC)) — Feb 2025 — Present

- Assisted in research on mask-based goal representation for robot learning, conducting experiments with multiple open-vocabulary object detection models to assess their effectiveness (In submission: [J3]).
- Investigated model-based (TD-MPC2) and model-free (SAC) reinforcement learning for Sim-to-Sim transfer with fine-tuning in the target domain.

Machine Learning & Mind Lab (MLML), KAIST — Daejeon, South Korea
Graduate Student Research Assistant (PI: Prof. Sungjin Ahn) — Nov 2022 — Feb 2025

- Researched zero-shot task generalization in model-based RL, leading to a state-of-the-art agent (Publication: [C2]).
- Explored intrinsic motivation in hierarchical model-based RL, focusing on how high-level policies guide low-level policies.
- Worked on diffusion-based planning for long-horizon tasks while learning on short trajectories (In Submission: [P1])

Unmanned Technology Laboratory, Innopolis University — Innopolis, Russia
Junior Developer (Industry Oriented) — June 2021 — June 2022

- Developed ROS packages for various drone modules, including gimbal control, RTK GPS, and payload control.
- Integrated Livox lidar with the lab's drone for outdoor mapping.
- Developed a handheld Lidar device for indoor/outdoor mapping for an industrial partner (results).

Center of Robotics, Innopolis University — Innopolis, Russia
Undergraduate Research Assistant (PI: Prof. Sergei Savin) — Aug 2019 — April 2021

- Conducted RL experiments for a stabilizing control policy of a tensegrity hopper (Publication: [C1]).
- Designed and implemented a contactless differentiable physics simulator for tensegrity robots using Taichi.
- Performed research on sim2real transfer for a three-prism tensegrity robot.

PUBLICATIONS

(C: conference / J: journal / P: preprint / *: equal contribution)

[**P1**] C. Chen*, **H.Hamed***, D. Baek, T. Kang, Y. Bengio, S. Ahn. "Extendable Planning via Multiscale Diffusion." Submitted for AAAI 2026. (arXiv version)

[**J3**] F. Shahriar, H. Wang, S. Alireza, G. Vasan, **H. Hamed**, C. Bellinger, R. Mahmood. "General and Efficient Visual Goal-Conditioned Reinforcement Learning using Object-Agnostic Masks." Submitted to IEEE Robotics and Automation Letters (RA-L 2025).

[**C2**] **H. Hamed***, S. Kim*, D. Kim, J. Yoon, and S. Ahn. "Dr. Strategy: Model-Based Generalist Agents with Strategic Dreaming." In Forty-first International Conference on Machine Learning (ICML 2024).

[**J2**] G. Kulathunga, **H. Hamed**, and A. Klimchik. "Residual dynamics learning for trajectory tracking for multi-rotor aerial vehicles." Scientific Reports 14, no. 1 (2024).

[**J1**] G. Kulathunga, **H. Hamed**, D. Devitt, and A. Klimchik. "Optimization-based trajectory tracking approach for multi-rotor aerial vehicles in unknown environments." IEEE Robotics and Automation Letters (RA-L 2022).

[**C1**] V. Kurenkov, **H. Hamed**, and S. Savin, "Learning stabilizing control policies for a tensegrity hopper with augmented random search" in International Conference on Industrial Engineering, Applications and Manufacturing (ICIEAM 2020).

AWARDS

- ICML Travel Grant 2024
- KAIST Graduate School Full Scholarship (Master) 2022-2024
- Outstanding Achievements at Innopolis University Fall 2020
- Outstanding Contribution to Science at Innopolis University 2020, 2021
- 3rd place DOTS competition from Bristol Robotics Lab and Toshiba June 2021
- Innopolis University Full Scholarship (Bachelor) 2018-2022

Teaching Experience

- TA in CS492 "Deep Reinforcement Learning", KAIST Spring 2023
- TA in "Introduction to ROS" course, Innopolis University Summer 2022

Academic Service

- **Conference Reviewer:** ICLR (2024, 2025), IROS (2024), ACML (2024), Humanoids (2025), AAAI (2026)
- **Workshop Reviewer:** ICML AutoRL (2024)
- **Journal Reviewer:** IEEE RA-L (2024)

EXTRACURRICULAR ACTIVITIES

Korea Science and Engineering Fair (KSEF) South Korea
Judge 2022, 2023

- Conducted technical interviews with the participants.
- Judged the research reports and participants' presentations.

World Robotics Olympiad (WRO) International Finals
Judge 2022 - 2024

- Developed the game rules of the international competition for the "Advanced Robotics Challenge (ARC)" category.
- Served as a head judge for the Russian qualifications.
- Served as a judge for the international compeitition in Győr, Hungary.