ARASH ASGHARIVASKASI

CONTACT INFORMATION

Hillbot Inc.
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San Diego, CA 92121

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EDUCATION

PhD., Electrical and Computer Engineering — 2018 - 2024
University of California, San Diego, USA — GPA: 3.88/4
Thesis: *Distributed Multi-Robot Active OcTree Mapping*
Advisor: Nikolay Atanasov

M.S., Electrical and Computer Engineering — 2018 - 2021
University of California, San Diego, USA — GPA: 3.88/4

B.S., Electrical Engineering (with Minor in Economics) — 2013 - 2018
Sharif University of Technology, Tehran, Iran — GPA: 3.79/4

INDUSTRY EXPERIENCE

- **Senior Engineer of Navigation**: Hillbot, San Diego, USA — 2024 - Present
  - Develop and maintain a multi-robot autonomous navigation system to support collaborative pick and place tasks within large indoor environments.
  - Physics-based identification of robot dynamics, used for learning navigation policies on a robot digital twin inside simulation, with zero-shot real-world deployment.
  - Language-driven procedural generation of simulation environments with safety and feasibility guarantees, utilized for large-scale robot policy training.
  - Real-world deployment of Vision-Language-Action (VLA) models, with systematic evaluation of sim-to-real domain gaps.

- **Trainee**: BrainCorp, San Diego, USA — Spring 2019
  - Topic: Autonomous robot exploration and mapping
  - Skills: Industry-level Python programming, version control, CI/CD pipelines

- **Trainee**: Ericsson, Tehran, Iran — Fall 2016
  - Topics: Corporate ethics, business trends in the communication industry
  - Technologies: Internet protocols, LTE, TV broadcasting

RESEARCH EXPERIENCE

- **Graduate Student Researcher** — 2018 - 2024
  Existential Robotics Laboratory, University of California, San Diego, USA

- **Research Intern** — Summer 2017
  Convex Research Group, Hong Kong University of Science and Technology, Kowloon, Hong Kong SAR

TECHNICAL INTERESTS

- Simultaneous Localization and Mapping (SLAM); Novel Environment Representations; Bayesian Techniques for Joint Inference of Geometry and Semantics; Sensor Fusion for SLAM

- Autonomous Robot Exploration; Perception-aware Planning and Control; Active SLAM; Model-based and Model-free Active Target Tracking

- Multi-robot Systems; Distributed Estimation and Planning; Decentralized Riemannian Optimization

- Large-scale Robot Learning; Real-to-Sim and Sim-to-Real Domain Adaptation

- **Relevant fields**:
  Robotics, Machine Learning, Computer Vision, Distributed Optimization, Security and Surveillance

- **Related skills**:
  Python, C++, ROS, System Identification, HIL/SIL, PyTorch, TensorRT, LLM/VLM, VCS, CI/CD

JOURNAL ARTICLES

- **A. Asgharivaskasi**, F. Girke, and N. Atanasov, "Riemannian Optimization for Active Mapping with Robot Teams," in IEEE Transactions on Robotics (T-RO), 2025

- **A. Asgharivaskasi**, N. Atanasov, "Semantic OcTree Mapping and Shannon Mutual Information Computation for Robot Exploration," in IEEE Transactions on Robotics (T-RO), 2023

CONFERENCE PROCEEDINGS

- Z. Dai, **A. Asgharivaskasi**, T. Duong, S. Lin, M. Tzes, G. Pappas, and N. Atanasov, "Optimal Scene Graph Planning with Large Language Model Guidance," in IEEE International Conference on Robotics and Automation (ICRA), 2024

- P. Yang, S. Koga, **A. Asgharivaskasi**, and N. Atanasov, "Policy Learning for Active Target Tracking over Continuous SE (3) Trajectories," in Learning for Dynamics & Control Conference (L4DC), 2023

- D. T. Larsson, **A. Asgharivaskasi**, J. Lim, N. Atanasov, and P. Tsiotras, "Information-theoretic Abstraction of Semantic Octree Models for Integrated Perception and Planning," in IEEE International Conference on Robotics and Automation (ICRA), 2023

- P. Yang, Y. Liu, S. Koga, **A. Asgharivaskasi**, and N. Atanasov, "Learning Continuous Control Policies for Information-Theoretic Active Perception," in IEEE International Conference on Robotics and Automation (ICRA), 2023

- **A. Asgharivaskasi**, S. Koga, and N. Atanasov, "Active Mapping via Gradient Ascent Optimization of Shannon Mutual Information over Continuous $SE(3)$ Trajectories," in IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2022

- S. Koga, **A. Asgharivaskasi**, and N. Atanasov, "Active SLAM over Continuous Trajectory and Control: A Covariance-Feedback Approach," in American Control Conference (ACC), 2022

- S. Koga, **A. Asgharivaskasi**, and N. Atanasov, "Active Exploration and Mapping via Iterative Covariance Regulation over Continuous SE(3) Trajectories," in IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2021

- **A. Asgharivaskasi** and N. Atanasov, "Active Bayesian Multi-class Mapping from Range and Semantic Segmentation Observations," in IEEE International Conference on Robotics and Automation (ICRA), 2021

BOOK CHAPTERS

- **A. Asgharivaskasi**, K. Doherty, J. Behley, N. Hughes, Y. Chang, J. Leonard, H. I. Christensen, L. Carlone, and N. Atanasov, "Metric-Semantic SLAM," SLAM Handbook: From Localization and Mapping to Spatial Intelligence, Cambridge University Press, 2025

WORKSHOP PAPERS

- **A. Asgharivaskasi** and N. Atanasov, "Distributed Optimization with Consensus Constraint for Multi-Robot Semantic Octree Mapping," in Workshop on Collaborative Perception and Learning (CoPerception) at ICRA, 2023

PROFESSIONAL ACTIVITIES

Reviewer:

- **Journals**: IEEE Transactions on Robotics (T-RO), Elsevier Artificial Intelligence, IEEE Robotics and Automation Letters (RA-L), Springer Autonomous Robots, IEEE Systems Journal (ISJ), IEEE Transactions on Automation Science and Engineering (T-ASE), IEEE Transactions on Cognitive and Developmental Systems (T-CDS)
- **Conferences**: Robotics: Science and Systems (RSS), IEEE International Conference on Robotics and Automation (ICRA), American Control Conference (ACC), IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), IEEE International Symposium on Multi-Robot and Multi-Agent Systems (MRS)

Workshop Organization:

- Co-organizer and lecturer, Virtual Workshop on "Robotics Algorithms in Python," UCSD HKN chapter and SDSU IEEE chapter, March 2021.

TEACHING EXPERIENCE

Workshop Organization:

- Existential Robotics Laboratory, UC San Diego   2019 - 2024

Workshop Organization:

- Sensing and Estimation in Robotics   Winter 2020/2021/2022
- Communication Systems   Fall 2017
- Artificial Intelligence and Biological Computations   Spring 2017
- Multi-Camera Vision   Spring 2017
- Computer Vision and Ambient Intelligence   Fall 2016/2017
- Signals and Systems   Spring 2016
- Engineering Mathematics   Fall 2015