

# ARASH ASGHARIVASKASI

## CONTACT INFORMATION

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## EDUCATION

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**PhD., Electrical and Computer Engineering** 2018 - Present  
University of California, San Diego, USA  
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

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- **Trainee:** BrainCorp, San Diego, USA Spring 2019
  - Project: 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

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- **Graduate Student Researcher:** Existential Robotics Laboratory, University of California, San Diego, USA Fall 2018 - Present
- **Intern:** Convex Research Group, Hong Kong University of Science and Technology, Kowloon, Hong Kong SAR Summer 2017

## RESEARCH INTERESTS

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- 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
- **Relevant fields:** Robotics, Machine Learning, Computer Vision, Distributed Optimization, Security
- **Related skills:** C++, Python, ROS1/2, GTSAM, PyTorch, TensorRT, LLM/VLM, VCS, CI/CD

## JOURNAL ARTICLES

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- **A. Asgharivaskasi**, F. Girke, and N. Atanasov, “Riemannian Optimization for Active Mapping with Robot Teams,” submitted to IEEE Transactions on Robotics (T-RO), 2024
- **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

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- 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

## WORKSHOP PAPERS

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- **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

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### 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

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- **Robotics Mentor:** Existential Robotics Laboratory, UC San Diego Summer 2019 - Present
- **Teaching Assistant:** ECE276A: Sensing and Estimation in Robotics, UC San Diego Winter 2022
- **Teaching Assistant:** ECE276A: Sensing and Estimation in Robotics, UC San Diego Winter 2021
- **Teaching Assistant:** ECE276A: Sensing and Estimation in Robotics, UC San Diego Winter 2020
- **Teaching Assistant:** Computer Vision and Ambient Intelligence, Tehran, Iran Fall 2017
- **Teaching Assistant:** Communication Systems, Tehran, Iran Fall 2017
- **Teaching Assistant:** Artificial Intelligence and Biological Computations, Tehran, Iran Spring 2017
- **Teaching Assistant:** Multi-Camera Vision, Sharif University of Technology, Tehran, Iran Spring 2017
- **Teaching Assistant:** Computer Vision and Ambient Intelligence, Sharif University of Technology, Tehran, Iran Fall 2016
- **Teaching Assistant:** Signals and Systems, Sharif University of Technology, Tehran, Iran Spring 2016
- **Teaching Assistant:** Engineering Mathematics, Sharif University of Technology, Tehran, Iran Fall 2015