MARILIZA TZES

GRASP Lab, University of Pennsylvania, Philadelphia, PA 19104-6228
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RESEARCH INTERESTS

Semantic Planning, LLMs in Robotics, Distributed Robotics, Information Acquisition

EDUCATION

Ph.D., Electrical and Systems Engineering *2018-Present*
GRASP Lab, University of Pennsylvania, United States
Advisor: Dr. George J. Pappas

M.S.E. in Robotics *2018-2020*
GRASP Lab, University of Pennsylvania, United States
Overall GPA: 3.6 out of 4

Integrated Master (B.Sc. & M.Eng.) *2013-2018*
Electrical and Computer Engineering, University of Patras, Greece
Thesis: Collaborative visual area coverage by unmanned aerial vehicles
Advisors: Dr. Stamatios Manesis & Dr. Antony Tzes
Overall GPA: 9.02 out of 10, ranked 2nd in class

RESEARCH, WORKING & TEACHING EXPERIENCE

Graduate Research Assistant, GRASP Lab, University of Pennsylvania *2018 - Present*

- Developed a highly scalable, distributed, non-myopic, sampling-based planning method for multi-robot active information acquisition with asymptotical optimality guarantees and probabilistic completeness.
- Designed a hybrid control architecture to address mobile manipulation tasks under sensing and environmental uncertainty.
- Proposed the I-GBNet (Information-aware Graph Block Network), a highly-scalable, distributed algorithm for multi-robot information acquisition.
- Designed an optimal hierarchical task planning method for scene graph representations with Large Language Model guidance.

Applied Scientist Intern, Amazon Robotics & AI *2022*

- Adapted state-of-the-art Computer Vision and Natural Language Processing methods (CLIP), to leverage plain text descriptions from the Amazon Catalog to improve item identification accuracy of a system used in Amazon Fulfilment Center.
- Applied improved methods for fusing information from text and images and outperformed existing methods and data sources currently in use.

Teaching Assistant, University of Pennsylvania
ESE 617 - Non Linear Control Theory, ESE 619 - Model Predictive Control, ESE 500 - Linear Systems

Teaching Assistant, University of Patras
ECE411 - Signals and Systems I

HONORS AND REWARDS

- Outstanding Paper Award in Multi-Robot Systems, ICRA 2023
- RAS Travel Grant for attending ICRA 2023 in London (2023)
- Dean's Fellowship from University of Pennsylvania for graduate studies (2018)
- Bruce Ford Memorial Fellowship for exceptional achievements among graduate students at University of Pennsylvania, Department of Electrical and Systems Engineering (2018)

- Award of Academic Excellence from LIMMAT Foundation (Switzerland) for being ranked 2nd at my graduation year August 2018 at University of Patras, School of Electrical and Computer Engineering (2018)

JOURNAL ARTICLES

J1. **M. Tzes**, S. Papatheodorou, A. Tzes: 'Visual Area Coverage by heterogeneous aerial agents under imprecise localization' in *IEEE Control Systems Letter*, vol. 2, no. 4, pp. 623-628, Oct. 2018.

CONFERENCE PAPERS

C8. Z. Dai, A. Asgharivaskasi, T. Duong, S. Lin, **M. Tzes**, G. Pappas, N. Atanasov: 'Optimal Scene Graph Planning with Large Language Model Guidance', submitted to *ICRA 24'*

C7. **M. Tzes***, N. Bousias*, E. Chatzipantazis, G. Pappas: 'Graph Neural Networks for Multi-Robot Active Information Acquisition' in *ICRA 23'*, London, United Kingdom, May 2023 (**Outstanding Paper Award in Multi-Robot Systems)**

C6. **M. Tzes**, V. Vasilopoulos, Y. Kantaros, G. Pappas: 'Reactive Informative Planning for Mobile Manipulation Tasks under Sensing and Environmental Uncertainty' in *ICRA 22'*, Philadelphia, United States, May 2022

C5. **M. Tzes**, Y. Kantaros, G. Pappas: 'Distributed Sampling-based Planning for Non-Myopic Active Information Gathering' in *IROS 21'*, Prague, Czech Republic, September 2021

C4. N. Bousias, S. Papatheodorou, **M. Tzes**, A. Tzes: 'Distributed surveillance by a swarm of UAVs operating under positional uncertainty' in ECESCON 11, Thessaloniki, Greece, April 2019

C3. N. Bousias, S. Papatheodorou, **M. Tzes**, A. Tzes: Collaborative visual area coverage using aerial agents equipped with PTZ-cameras under localization uncertainty', in 18_{th} *European Control Conference (ECC)*, Naples, Italy, 2019, pp. 1079-1084.

C2. **M. Tzes**, S. Papatheodorou, A. Tzes: 'Visual Area Coverage by heterogeneous aerial agents under imprecise localization' in *Control and Decisions Conference (CDC)*, Miami, United States, 2018 (appeared in *IEEE CSS-letter)*

C1. **M. Tzes**, S. Papatheodorou, A. Tzes: 'Collaborative Visual Area Coverage by Aerial Agents Under Positioning Uncertainty,' in 26_{th} *Mediterranean Conference on Control and Automation (MED)*, Zadar, Croatia, June 2018, pp. 1-154.

SKILLS

Programming	Python, MATLAB, C++, LabVIEW
Technologies & Tools	ROS, PyTorch, Numpy, GPy, PyTorch Geometric, OpenAI Gym, Linux, MS Office, Windows
Languages	Greek (Native Language), English (Full Professional Proficiency), French (Elementary Proficiency: Delf B2)
Other	Piano Soloist (Diploma in piano, 2018)