















CONTACT INFORMATION	<ul style="list-style-type: none"> ▪ Email: vaghat@seas.upenn.edu  ▪ Webpage  / Google Scholar  / LinkedIn in / Twitter  / Github 
RESEARCH INTERESTS	Computer Vision, Robotics, Geometric Deep Learning, Equivariant representations, Optimization on Manifolds, Generative Models, Differential Geometry, AI for Science and Engineering
EDUCATION	<div> <div data-bbox="381 422 781 443">University Of Pennsylvania (UPenn)</div> <div data-bbox="1349 422 1458 443">Sep 2018-</div> <ul style="list-style-type: none"> ▪ PhD in Computer and Information Science <ul style="list-style-type: none"> • Specialization: Geometric Deep Learning, Computer Vision • Advisor: Kostas Daniilidis  ▪ Master in Statistics and Data Science (Wharton) Jan 2023- <ul style="list-style-type: none"> • Current GPA: 4.00/4.00 • Relevant Coursework: Statistical Machine Learning, High-dimensional Statistics, Time-Series Forecasting, Stochastic Processes, Conformal Prediction ▪ Master of Engineering in Robotics (GRASP Laboratory) Sep 2020- Dec 2022 <ul style="list-style-type: none"> • GPA: 4.00/4.00 • Relevant Coursework: Convex Optimization, Learning in Robotics, Machine Perception, Advanced Machine Perception, Principles of Deep Learning, Theory of Computation <div> <div data-bbox="381 779 1013 800">National Technical University of Athens (NTUA), Greece</div> <div data-bbox="1240 779 1458 800">Sep 2012- Sep 2018</div> <ul style="list-style-type: none"> ▪ BSc & MSc in Electrical and Computer Engineering (5-year joint degree; 300 ECTS) <ul style="list-style-type: none"> • GPA: 9.58/10.0 (top 1% among graduate class of 341 students; highest honors) • Major GPA: 9.64/10.0 (top 1%) Specialization: Computer Science • Relevant Coursework: Computer Vision, Stochastic Processes, Pattern Recognition, Deep Learning, Advanced Algorithms, Algorithmic Machine Learning, Spectral Graph Theory, Social Network Analysis • Undergraduate Thesis: “<i>Spectral Graph Methods with Applications in Computer Vision</i>”  (Greek) • Advisor: Petros Maragos  </div> </div>
PUBLICATIONS	<ul style="list-style-type: none"> ▪ EqNIO: Subequivariant Neural Inertial Odometry. Royina Karegoudra Jayanth, Yinshuang Xu, Ziyun Wang, Evangelos Chatzipantazis, Daniel Gehrig, Kostas Daniilidis.  (Under Review) ▪ BiEquiFormer: Bi-Equivariant Representations for Global Point Cloud Registration. Stefanos Pertigkiozoglou*, Evangelos Chatzipantazis*, Kostas Daniilidis.  (Under Review) ▪ Improving Equivariant Model Training via Constraint Relaxation, Stefanos Pertigkiozoglou*, Evangelos Chatzipantazis*, Shubhendu Trivedi, Kostas Daniilidis.  NeurIPS 2024. ▪ (Best Student Paper) Structural Risk Minimization for Learning Nonlinear Dynamics, Charis Stamouli, Evangelos Chatzipantazis, George J Pappas.  ACC 2024. ▪ SE(3)-Equivariant Attention Networks for Shape Reconstruction in Function Space, E.Chatzipantazis*, S.Pertigkiozoglou*, E.Dobriban, K.Daniilidis.   ICLR 2023. ▪ (Outstanding Paper) Graph Neural Networks for Multi-Robot Active Information Acquisition. M.Tzes, N.Bousias, E.Chatzipantazis, G.Pappas.   ICRA 2023. ▪ Learning Augmentation Distributions Using Transformed Risk Minimization, E.Chatzipantazis*, S.Pertigkiozoglou*, K.Daniilidis, E.Dobriban.  TMLR 2023. ▪ Unsupervised Monocular Depth and Latent Structure, K.Chaney*, B.Bucher*, E.Chatzipantazis, J.Shi, K.Daniilidis. CVPR Workshop on 3D Scene Understanding for Vision, and Robotics 2019.

**PROFESSIONAL
EXPERIENCE**

▪ **(Boston Dynamics) AI Institute**

- *Research Intern.*


Jun 2024-

- Designed a novel policy learning algorithm for robotic manipulation tasks that exploits advanced perception representations to produce multimodal policies fast and robustly.
- Supervisor: Robert Platt , Robin Walters .

▪ **University of Pennsylvania (UPenn)**

- *Graduate Research Assistant, GRASP Lab, UPenn.*



Sep 2018-

- Conceptualized and implemented an equivariant attention-based neural network for point cloud reconstruction and improved the state-of-the-art by a large margin while achieving zero-shot generalization to real scenes.
- Conceptualized a mathematical framework for automatic discovery of symmetries in data and implemented a modular and efficient algorithm for recovering and applying useful augmentations while training large neural networks for vision tasks.
- Implemented a deep network for monocular depth estimation and fused it with IMU measurements using a MSCKF for vision and inertial odometry.
- Supervisor: Kostas Daniilidis 

- *Teaching Assistant CIS700: Advanced Topics in Geometric Deep Learning,*


Spring 2024


- Lecture on theoretical derivation and practical implementation of $SE(2)$, $SE(3)$ steerable equivariant networks.

- Professor: Kostas Daniilidis , Jean Gallier 

- *Teaching Assistant CIS680: Advanced Machine Perception,*



Spring 2019

- Designed MaskRCNN implementation from scratch and curated COCO dataset.
- Website 

- Professor: Jianbo Shi 


- *Teaching Assistant ESE546: Principles of Deep Learning,*

Spring 2019, 2020

- Co-authored course material in PAC-learning and Markov Chains.
- Class Notes 
- Professor: Pratik Chaudhari 

- *Teaching Assistant ESE650: Learning in Robotics,*


Fall 2019






- Designed assignment on Partially Observable Markov Decision Processes (POMDP).
- Professor: Kostas Daniilidis 

▪ **National Technical University of Athens,**

Sep 2017- Sep 2018

- *Undergraduate Research Assistant, Computer Vision and Signal Processing (CVSP) Lab.*

- Scaled up spectral graph algorithms for image segmentation and extended previous methods by incorporating user-defined hard constraints.
- Supervisor: Petros Maragos 

HONORS& AWARDS	▪ Best Student Paper Award ACC 2024. Paper: Structural Risk Minimization for Learning Nonlinear Dynamics
	▪ Outstanding Paper Award in Multi-Robot Systems ICRA 2023. Paper: Graph Neural Networks for Multi-Robot Active Information Acquisition .
	▪ Gerondelis Foundation Graduate Scholarship 2022. Awarded for academic excellence to support Ph.D. Studies.
	▪ Thomaideion Award 2016, 2018. Awarded for highest grade among all students of Electrical and Computer Engineering in academic years 2015-2016 and 2017-2018.
	▪ Kritikos Award 2017. Awarded for highest grade in all courses of Mathematics among fellow students for the academic year 2016-2017.
	▪ Papakyriakopoulos Award 2016. Awarded for highest grade in all courses of Mathematics among fellow students for years 2015-2016.
	▪ "The Great Moment of Education" Eurobank EFG Award 2012. Ranking 1st among fellow students in high school in the National Qualification Exams, 2012.
ACADEMIC SERVICE	<ul style="list-style-type: none"> ▪ Organizer of IROS 2024 Workshop on <i>Equivariant Robotics: The Role of Symmetry Across Perception, Estimation, and Control</i> Website  ▪ Invited Speaker in CVPR 2024 workshop on <i>Equivariant Vision: From Theory to Practice</i>: Talk on practical and theoretical aspects of equivariant deep learning. Slides  ▪ Machine Learning Conference Reviewer: ICML 2022,2023,2024, NeurIPS 2022,2023,2024. ▪ Computer Vision Conference Reviewer: ICCV 2023. ▪ Robotics Conference Reviewer: ICRA 2023.
LANGUAGES	Greek: Native language. English: fluent. French: novice
TECHNICAL SKILLS	<ul style="list-style-type: none"> ▪ Programming Languages <ul style="list-style-type: none"> • Current Frequent Use: Python • Past Frequent Use: C, C++, Java, Prolog, SMLNJ, MATLAB, HTML5, Javascript, PHP, mySQL ▪ Other Programming Skills <ul style="list-style-type: none"> • PyTorch, Parallel & GPU Programming , Github, L^AT_EX, Unix Kernel programming, bash scripting
OTHER INTERESTS	Competitive Swimming (7 years), Water Polo (3 years), Tennis (3 years), Guitar(self-taught)
REFERENCES (UPON REQUEST)	<div> Kostas Daniilidis Edgar Dobriban Pratik Chaudhari </div> <div> Ruth Yalom Stone Professor UPenn  Associate Professor of Statistics and Data Science Wharton  Assistant Professor UPenn  </div>