Evangelos Chatzipantazis

PhD Student

CONTACT INFORMATION
- **Email**: vaghat@seas.upenn.edu ✉
- Webpage ⚯ / Google Scholars 🎓 / LinkedIn in / Twitter 🐦 / Github ○

RESEARCH INTERESTS

Computer Vision, Robotics, Geometric Deep Learning, Equivariant representations, Vision Foundation Models, Optimization on Manifolds, Generative Models, AI for Science and Engineering

EDUCATION

University Of Pennsylvania (UPenn)   **Sep 2018-**
- **PhD** in Computer and Information Science
  - Specialization: Geometric Deep Learning, Computer Vision
  - Advisor: Kostas Daniilidis 🎓
- **Master** in Statistics and Data Science (Wharton)   **Jan 2023-**
  - **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**
  - **GPA**: 4.00/4.00
  - Relevant Coursework: Convex Optimization, Learning in Robotics, Machine Perception, Advanced Machine Perception, Principles of Deep Learning, Theory of Computation

National Technical University of Athens (NTUA), Greece   **Sep 2012- Sep 2018**
- **BSc & MSc** in Electrical and Computer Engineering (5-year joint degree; 300 ECTS)
  - **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: *"Spectral Graph Methods with Applications in Computer Vision"* ✎ *(Greek)*
    Advisor: Petros Maragos 🎓

PUBLICATIONS
- 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**.

RESEARCH EXPERIENCE

- **(Boston Dynamics) AI Institute**
  - *Research Intern*.   **Jun 2024-**
  - Designing policy learning algorithms for robotic manipulation that leverage neural rendering and vision foundation models to produce fast and robust multimodal policies.
    - *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 🎓

- **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

- **Organizer** of IROS 2024 Workshop on *Equivariant Robotics: The Role of Symmetry Across Perception, Estimation, and Control* Website 🔗, Recording 🔗
- **Invited Speaker** in CVPR 2024 workshop on *Equivariant Vision: From Theory to Practice*: Talk on practical and theoretical aspects of equivariant deep learning. Website 🔗, Slides ✏️.
- Machine Learning Conference Reviewer: ICML 2022,2023,2024, NeurIPS 2022,2023,2024.
- Computer Vision Conference Reviewer: ICCV 2023.
- Robotics Conference Reviewer: ICRA 2023.

TEACHING EXPERIENCE

- *Teaching Assistant CIS700: Advanced Topics in Geometric Deep Learning*,   Spring **2024**
  - Lectures on Equivariant Deep Learning: [Harmonic networks from steerability constraints](#).
  - *Professor*: Kostas Daniilidis 🎓, Jean Gallier 🎓
- *Teaching Assistant CIS680: Advanced Machine Perception*,   Spring **2019**
  - MaskRCNN implementation from scratch on a newly curated COCO dataset: 📄: (✏️, </>).
  - Website 🔗
  - *Professor*: Jianbo Shi 🎓

- ***Teaching Assistant ESE546: Principles of Deep Learning***,   Spring **2019, 2020**
    - Co-authored course material in PAC-learning (Chapter 13) 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) and developed a novel fusion of Multi State Constraint Kalman Filter with deep depth estimators 📄.
    - *Professor*: Kostas Daniilidis 🎓

LANGUAGES   **Greek**: Native language. **English**: fluent. **French**: novice

TECHNICAL SKILLS

- **Programming Languages**
    - Current Frequent Use: Python
    - Past Frequent Use: C, C++, Java, Prolog, SMLNJ, MATLAB, HTML5, Javascript, PHP, mySQL
- **Other Programming Skills**
    - PyTorch, Parallel & GPU Programming , Github, LaTeX, Unix Kernel programming, bash scripting

OTHER INTERESTS   Competitive Swimming (7 years), Water Polo (3 years), Tennis (3 years), Guitar(self-taught)

REFERENCES (UPON REQUEST)

Kostas Daniilidis	Ruth Yalom Stone Professor UPenn 🎓
Edgar Dobriban	Associate Professor of Statistics and Data Science Wharton 🎓
Robert Platt	Associate Professor, Northeastern University 🎓
Robin Walters	Assistant Professor, Northeastern University 🎓
Pratik Chaudhari	Assistant Professor UPenn 🎓