

# Miltiadis Kofinas

DEEP LEARNING RESEARCH SCIENTIST

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## Research Experience

### PhD in Computer Science (Artificial Intelligence)

Amsterdam, The Netherlands

UvA (UNIVERSITY OF AMSTERDAM)

Apr. 2020 - June 2024

- Title: Deep Future Spatio-temporal Forecasting
- Supervisor: Efstratios Gavves
- Expected graduation: October 2024

KEYWORDS: GRAPH NEURAL NETWORKS · TRANSFORMERS · NEURAL FIELDS · GEOMETRIC DEEP LEARNING · TEMPORAL DYNAMICS · DEEP WEIGHT SPACE

### Research Assistant

Amsterdam, The Netherlands

UNIVERSITY OF AMSTERDAM

Mar. 2019 - May 2019

Project: Scene Graph Generation using Graph Transformer Networks

Supervisors: Assistant Professor Efstratios Gavves & Professor Cees G.M. Snoek

- Development of a novel Graph Network for visual scene graph generation that explicitly utilizes both local and global information on the graph space, using Transformer blocks to attend to global context.

KEYWORDS: VISUAL SCENE GRAPH GENERATION · GRAPH NEURAL NETWORKS · TRANSFORMERS · GRAPH PRUNING

### Computer Vision & Machine Learning Engineer

Thessaloniki, Greece

P.A.N.D.O.R.A. ROBOTICS TEAM, ARISTOTLE UNIVERSITY OF THESSALONIKI

Oct. 2014 - Oct. 2015

- Development of a general-purpose image classification API using RGB-D sensor data, as well as a benchmarking API for performance evaluation of computer vision algorithms; motion detection and obstacle detection from RGB-D sensor data.
- Honors: 2nd Best Autonomous Robot, Robocup Rescue Competition, Hefei, China, July 2015

KEYWORDS: IMAGE CLASSIFICATION · NEURAL NETWORKS · SVMs · BENCHMARKING · MOTION DETECTION · OBSTACLE DETECTION

## Education

### Diploma (M.Sc. equivalent) in Electrical and Computer Engineering

Thessaloniki, Greece

AUTH (ARISTOTLE UNIVERSITY OF THESSALONIKI)

Oct. 2010 - Nov. 2018

- Specialization Field: Electronics and Computer Engineering
- GPA: 7.57/10
- ECTS: 307
- Thesis: Scene Graph Generation using Message Passing Neural Networks and Graph Convolutional Networks
  - SUPERVISORS: POSTDOCTORAL RESEARCH ASSOCIATE CHRISTOS DIOU & ASSOCIATE PROFESSOR ANASTASIOS DELOPOULOS
  - Visual scene graph generation using an end-to-end neural network that incorporates a message passing neural network, propagating contextual information between objects and their relationships to iteratively refine its predictions, as well as a relationship pruning network that learns to identify and dismiss unlikely relationships.
  - Links to thesis: [Greek \(Original\)](#), [English \(Translated\)](#)

## Technical Skills

**Programming Languages** Python, C++, C, MATLAB/Octave, Java

**Deep Learning Frameworks** PyTorch, TensorFlow

**Deep Learning Libraries** PyTorch Geometric, PyTorch Lightning, WandB, Tensorboard, Hydra

**Miscellaneous** Git, Linux, SLURM,  $\LaTeX$ , TikZ, OpenCV, ROS

## Selected Publications

### CONFERENCE PAPERS

- Yongtuo Liu, Sara Magliacane, [Miltiadis Kofinas](#), and Efstratios Gavves. **Amortized Equation Discovery in Hybrid Dynamical Systems**. In: *The Forty-first International Conference on Machine Learning (ICML)*. 2024 ([ArXiv](#)) ([Github](#))
- Samuele Papa, Riccardo Valperga, David M. Knigge, [Miltiadis Kofinas](#), Phillip Lippe, Jan-jakob Sonke, and Efstratios Gavves. **How to Train Neural Field Representations: A Comprehensive Study and Benchmark**. In: *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*. 2024 ([ArXiv](#)) ([Github](#))
- [Miltiadis Kofinas](#)<sup>†</sup>, Boris Knyazev, Yan Zhang, Yunlu Chen, Gertjan J. Burghouts, Efstratios Gavves, Cees G.M. Snoek, and David W. Zhang<sup>†</sup>. **Graph Neural Networks for Learning Equivariant Representations of Neural Networks**. In: *12th International Conference on Learning Representations (ICLR)*. 2024 ([ArXiv](#)) ([OpenReview](#)) ([Github](#)) [[Oral](#)] <sup>†</sup>: Joint first and last authors

- [Miltiadis Kofinas](#), Erik J. Bekkers, Naveen Shankar Nagaraja, and Efstratios Gavves. **Latent Field Discovery in Interacting Dynamical Systems with Neural Fields**. In: *Advances in Neural Information Processing Systems 36 (NeurIPS)*. 2023 ([ArXiv](#)) ([OpenReview](#)) ([Github](#))
- Yongtuo Liu, Sara Magliacane, [Miltiadis Kofinas](#), and Efstratios Gavves. **Graph Switching Dynamical Systems**. In: *The Fortieth International Conference on Machine Learning (ICML)*. 2023 ([ArXiv](#)) ([Github](#))
- [Miltiadis Kofinas](#), Naveen Shankar Nagaraja, and Efstratios Gavves. **Roto-translated Local Coordinate Frames For Interacting Dynamical Systems**. In: *Advances in Neural Information Processing Systems 34 (NeurIPS)*. 2021 ([ArXiv](#)) ([OpenReview](#)) ([Github](#))

## WORKSHOP PAPERS

- Aviv Shamsian†, David W. Zhang†, Aviv Navon, Yan Zhang, [Miltiadis Kofinas](#), Idan Achituve, Riccardo Valperga, Gertjan Burghouts, Efstratios Gavves, Cees Snoek, Ethan Fetaya, Gal Chechik, and Haggai Maron. **Data Augmentations in Deep Weight Spaces**. In: *Workshop on Symmetry and Geometry in Neural Representations (NeurReps)*, *NeurIPS*. 2023 ([ArXiv](#)) [[Oral](#)] †: Equal contribution
- Piyush Bagad†, Floor Eijkelboom†, Mark Fokkema†, Danilo de Goede†, Paul Hilders†, and [Miltiadis Kofinas](#). **C-3PO: Towards Rotation Equivariant Feature Detection and Description**. In: *3rd Visual Inductive Priors for Data-Efficient Deep Learning Workshop*. 2022 ([OpenReview](#)) [[Oral](#)] †: Equal contribution

## Languages

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**Greek** Native Language

**English** Certificate of Proficiency in English, University of Michigan

[Level C2](#)

**French** Diplôme d'études en langue française B2, Centre international d'études pédagogiques (CIEP)

[Level B2](#)