Miltiadis **Kofinas**

Deep Learning Research Scientist

Amsterdam, The Netherlands

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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

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†, Boris Knyazev, Yan Zhang, Yunlu Chen, Gertjan J. Burghouts, Efstratios Gavves, Cees G.M. Snoek, and David W. Zhang†. **Graph Neural Networks for Learning Equivariant Representations of Neural Networks**. In: *12th International Conference on Learning Representations (ICLR)*. 2024 (ArXiv) (OpenReview) (Github) [Oral] †: 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

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*