Miltiadis **Kofinas**

Deep Learning Research Scientist

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Education

PhD in Computer Science

Amsterdam, The Netherlands

UvA (University of Amsterdam)

April 2020 - present

- Specialization: Deep Learning
- Title: Future Spatio-temporal Forecasting
- Supervisor: Efstratios Gavves

Diploma in Electrical and Computer Engineering (M.Sc. Equivalent)

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)

Research Experience

Scene Graph Generation using Graph Transformer Networks

University of Amsterdam

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

Mar. 2019 - May 2019

- 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

P.A.N.D.O.R.A. Robotics Team

Aristotle University of Thessaloniki

Computer Vision & Machine Learning Engineer

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

Technical Skills

Programming Languages	Python, C++, C, MATLAB/Octave, Java
Deep Learning Frameworks	PyTorch, TensorFlow
Deep Learning Tools	PyTorch Lightning, PyTorch Geometric, WandB, Tensorboard, Hydra
Miscellaneous	OpenCV, ROS, Linux, Git, Slurm, LaTeX, TikZ

Publications

Conference Papers

- **Miltiadis Kofinas**†, Boris Knyazev, Yan Zhang, Yunlu Chen, Gertjan J Burghouts, Efstratios Gavves, Cees GM Snoek, and David W Zhang†. "Graph Neural Networks for Learning Equivariant Representations of Neural Networks". In: *12th International Conference on Learning Representations (ICLR)*. 2024 (OpenReview) [Oral] †: Joint first and last authors
- 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**, 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: *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
- Samuele Papa, David M. Knigge, Riccardo Valperga, Nikita Moriakov, **Miltiadis Kofinas**, Jan-jakob Sonke, and Efstratios Gavves. "Neural Modulation Fields for Conditional Cone Beam Neural Tomography". In: *SynS and ML Workshop, International Conference on Machine Learning (ICML)*. 2023 (ArXiv)
- David W Zhang, **Miltiadis Kofinas**, Yan Zhang, Yunlu Chen, Gertjan J Burghouts, and Cees GM Snoek. "Neural Networks Are Graphs! Graph Neural Networks for Equivariant Processing of Neural Networks". In: *Workshop on Topology, Algebra, and Geometry in Machine Learning (TAG-ML), ICML*. 2023 (OpenReview)
- 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
- **Miltiadis Kofinas**, Erik J Bekkers, Naveen Shankar Nagaraja, and Efstratios Gavves. "Neural Fields for Latent Force Field Discovery in Interacting Systems". In: *ICLR 2023 Neural Fields across Fields Workshop*. 2023