# 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

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|---|---|
| **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

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

### Workshop Papers

- Shamsian†, Aviv, Zhang†, David W, Navon, Aviv, Zhang, Yan, **Kofinas**, **Miltiadis**, Achituve, Idan, Valperga, Riccardo, Burghouts, Gertjan, Gavves, Efstratios, Snoek, Cees, Fetaya, Ethan, Chechik, Gal, and Maron, Haggai. "Data Augmentations in Deep Weight Spaces". In: *Workshop on Symmetry and Geometry in Neural Representations (NeurReps), NeurIPS*. 2023
- Papa, Samuele, Knigge, David M., Valperga, Riccardo, Moriakov, Nikita, **Kofinas**, **Miltiadis**, Sonke, Jan-jakob, and Gavves, Efstratios. "Neural Modulation Fields for Conditional Cone Beam Neural Tomography". In: *SynS and ML Workshop, International Conference on Machine*

*Learning (ICML)*. 2023 (ArXiv)

- Zhang, David W, **Kofinas**, **Miltiadis**, Zhang, Yan, Chen, Yunlu, Burghouts, Gertjan J, and Snoek, Cees GM. "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)
- Bagad†, Piyush, Eijkelboom†, Floor, Fokkema†, Mark, Goede†, Danilo de, Hilders†, Paul, and **Kofinas**, **Miltiadis**. "C-3PO: Towards Rotation Equivariant Feature Detection and Description". In: *3rd Visual Inductive Priors for Data-Efficient Deep Learning Workshop*. 2022 (OpenReview)
- **Kofinas**, **Miltiadis**, Bekkers, Erik J, Nagaraja, Naveen Shankar, and Gavves, Efstratios. "Neural Fields for Latent Force Field Discovery in Interacting Systems". In: *ICLR 2023 Neural Fields across Fields Workshop*. 2023