Miltiadis **Kofinas**

Deep Learning Research Scientist

Cornelis Lelylaan 5B12, 1062HD, Amsterdam, The Netherlands

+31 (0)6 44772467 | mkofinas@gmail.com | mkofinas | mkofinas | miltiadiskofinas | MiltosKofinas

Education

UvA (University of Amsterdam)

Amsterdam, The Netherlands

PhD in Computer Science — *April 2020 - present*

- Title: Deep Future Spatio-temporal Forecasting

AUTh (Aristotle University of Thessaloniki)

Thessaloniki, Greece

Diploma in Electrical and Computer Engineering (M.Sc. Equivalent) — *Oct. 2010 - Nov. 2018*

- Specialization Field: Electronics and Computer Engineering
- GPA: 7.57/10
- ECTS: 307

Research Experience

Scene Graph Generation using Graph Transformer Networks

University of Amsterdam

Research Assistant · Supervisors: Professor Cees G.M. Snoek & Assistant Professor Efstratios Gavves — *Mar. 2019 - May 2019*

- Mathematical formulation of a novel abstract Graph Network layer for visual scene graph generation that explicitly utilizes both local and global information on the graph space.
- Experiments on various architectures to maximize relevant information propagation across graph vertices and edges.
- Implementation of a multilayer Graph Network that effectively stacks Graph Network layers to increase network performance.
- Use of global information via Transformer blocks that attentively gather global context.
- Introduction of a self-attentive relationship pruning network that effectively samples meaningful relationships.

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 to tackle victim detection.
  - Classification using a combination of HOG features, color histogram features from different color spaces (e.g. HSV, CIELab) and SIFT features with bag-of-words models.
  - Data augmentation using affine transformations, random sampling and color jittering.
  - Training and evaluation using support-vector machines (linear and non-linear), random forests and multilayer perceptrons.
- Motion detection using Gaussian mixture-based background/foreground segmentation algorithms.
- Soft obstacle detection from RGB-D sensor data using Haar wavelets and Hough transform.
- Hard obstacle detection from RGB-D sensor data using point cloud transformations for the creation of local elevation maps and various convolutional kernels for the creation of traversability maps.
- Development of a benchmark testing API for performance evaluation of computer vision algorithms under various environmental conditions (e.g. room lighting).

Diploma Thesis

Scene Graph Generation using Message Passing Neural Networks and Graph Convolutional Networks

Aristotle University of Thessaloniki

Supervisors: Associate Professor Anastasios Delopoulos & Postdoctoral research associate Christos Diou — *May 2017- Oct. 2018*

- Image semantic content representation using scene graphs that model objects and their relationships.
- Scene graph generation using an end-to-end model that incorporates a message passing scheme, propagating contextual information between objects and their relationships to iteratively refine its predictions.
- Experiments on message propagation architectures, including a modified version of Graph Convolutional Networks.
- Introduction of a relationship pruning network that learns to identify and dismiss unlikely relationships.
- Performance evaluation on scene graph generation and other auxiliary evaluation tasks using Visual Genome dataset.

Links to thesis:

– Greek (Original), English (Translated)

Technical Skills

Programming Languages	Python, C++, C, MATLAB/Octave, Java
Deep Learning Frameworks	PyTorch, TensorFlow
Computer Vision Libraries	OpenCV
Robot Software Development Frameworks	ROS
Miscellaneous	Linux, Git, Slurm, LaTeX, TikZ

Publications

Conference Papers

- **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)

Honors & Awards

2nd Best Autonomous Robot *Hefei, China*

Robocup Rescue Competition *July 2015*

As a member of P.A.N.D.O.R.A. Robotics Team

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*

Academic References

Available upon request.