Theodora Kontogianni

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Research Interests

Computer Vision, 3D Scene Understanding, Active Learning, Continual Learning

Current Position

· **ETH AI Center Postdoctoral Fellow**   01.2022 - present
Mentors: Prof. Dr. Konrad Schindler, Prof. Dr. Siyu Tang

Education

· **Ph.D. in Computer Vision, RWTH Aachen University, Germany.**   Nov. 2021
Ph.D. Thesis: *"Object discovery, interactive and 3D segmentation for large-scale computer vision tasks"*
Advisor: Prof. Dr. Bastian Leibe

· **M.Sc. in Media Informatics, RWTH Aachen University, Germany.**   Nov. 2011
Master Thesis: *"Semi-Supervised Online Learning for Low-Level Tracking"*
Supervisor: Prof. Dr. Bastian Leibe
Implementation of random ferns classifier for object detection, semi-supervised by a KLT tracker, extended to handle automatic initialization from a generic object detector and multi-object tracking. (Matlab, C++)

· **Diploma in Electrical and Computer Engineering, NTUA Athens, Greece.**   July 2009
Diploma Thesis: *"Model Management System For Graph Databases"*
Supervisor: Prof. Dr. Timoleon Sellis
Design of novel graph-like structures for efficient query answers. (C++)

Work Experience

· **Research Intern, Ph.D., Google Switzerland, Zurich, Switzerland.**   06.2019 - 11.2019
Mentors: Vittorio Ferrari, Jasper Uijlings, Michael Gygli

Worked on a new and improved approach for Interactive Object Segmentation, where the user collaborates with a deep learning model to segment objects of interest in images. In this project the user feedback is used to update the model parameters on-the-fly during test time. The project resulted in a paper accepted and presented at ECCV 2020.

· **Software Engineer Intern, Ph.D., Google LLC, Venice CA, USA.**   05.2018 - 08.2018
Mentors: Tobias Weyand, Fangting Xia

1) Worked on Large-Scale Landmark Recognition. Implemented Iconoid Shift, a more scalable clustering algorithm in C++ and evaluated it against the existing pipeline and other baselines. 2) Used Flume for the data preprocessing and the parallel computation of the clustering component.

· **Data Scientist, Zalando AG, Berlin, Germany.**   03.2012 - 04.2014
1) Prediction of sales and inventory clustering using machine learning algorithms. 2) Definition of a new metric to represent retail brands strength and its computation from website data. The metric was used as a feature for inventory replenishment and as part of negotiations with the brands. (Python)

· **Student Research Assistant, Computer Vision Group, RWTH Aachen University.**   01.2011 - 03.2011
Evaluation and extension of classless object detection algorithms. (Matlab)

Publications

· Interactive Object Segmentation in 3D Point Clouds
Theodora Kontogianni, Ekin Celikkan, Siyu Tang, Konrad Schindler
IEEE International Conference on Robotics and Automation (ICRA), 2023

- **Connecting the Dots: Floorplan Reconstruction Using Two-Level Queries**
  Yuanwen Yue, **Theodora Kontogianni**, Konrad Schindler, Francis Engelmann
  IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2023.

- **Continuous Adaptation for Interactive Object Segmentation by Learning from Corrections**
  Theodora Kontogianni[†], Michael Gygli[†], Jasper Uijlings, Vittorio Ferrari
  European Conference on Computer Vision (ECCV), 2020.

- **DualConvMesh-Net: Joint Geodesic and Euclidean Convolutions on 3D Meshes**
  Jonas Schult, Francis Engelmann, **Theodora Kontogianni**, Bastian Leibe
  IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2020. (Oral)

- **Dilated Point Convolutions: On the Receptive Field Size of Point Convolutions on 3D Point Clouds**
  Francis Engelmann, **Theodora Kontogianni**, Bastian Leibe
  IEEE International Conference on Robotics and Automation (ICRA), 2020.

- **3D Bird's-Eye-View Instance Segmentation**
  Cathrin Elich, Francis Engelmann, **Theodora Kontogianni**, Bastian Leibe
  German Conference on Pattern Recognition (GCPR), 2019. (YRF DAGM Best Master's Thesis Award)

- **Know What Your Neighbors Do: 3D Semantic Segmentation of Point Clouds**
  Francis Engelmann, **Theodora Kontogianni**, Jonas Schult, Bastian Leibe
  European Conference on Computer Vision (ECCV), GMDL Workshop, 2018.

- **Exploring Spatial Context for 3D Semantic Segmentation of Point Clouds**
  Theodora Kontogianni[†], Francis Engelmann[†], Alexander Hermans, Bastian Leibe
  International Conference on Applications of Computer Vision (ICCV), 3DRMS Workshop, 2017. (Spotlight)

- **Incremental Object Discovery in Time-Varying Image Collections**
  Theodora Kontogianni, Markus Mathias, Bastian Leibe
  IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2016.
  This work was the basis for a Google Faculty Research Award.

Mentoring

Master Thesis

Yuanwen Yue	ETH Zurich	2022-ongoing
Yunfan Zou	ETH Zurich	2022-ongoing
Aleksandar Jovanov	RWTH Aachen	2022-ongoing
Ekin Celikkan	RWTH Aachen	2021-2022

Semester Projects

Frawa Vetterli	ETH Zurich	2022-2023

Teaching Experience

ETH Zurich
- Lecturer: Projects in Machine Learning Research (Semi-supervised methods in 3D Scene Understanding) SS23
- Lecturer: Projects in Machine Learning Research (Graph Networks in 3D Semantic Segmentation)   SS22

RWTH Aachen University
- Organizer: Pro-seminar on Image Processing   WS20
- Teaching Assistant: Lecture on Computer Vision 2   WS18
- Teaching Assistant: Lecture on Computer Vision   SS18
- Teaching Assistant: Lecture on Computer Vision   SS16
- Teaching Assistant: Lecture on Computer Vision   WS14
- Organizer: Seminar on Current Topics in Computer Vision and Machine Learning   WS16

Awards

- 180000 CHF: ETH AI Center Postdoctoral Research Fellowship, 2021

- Outstanding reviewer award (ECCV 2020, CVPR 2021)

[†]Both authors contributed equally.

Reviewing

Computer Vision	IEEE Conference on Computer Vision and Pattern Recognition (CVPR)	2020-2023
	European Conference on Computer Vision (ECCV)	2020-2022
	International Conference on Computer Vision (ICCV)	2021
Machine Learning	Neural Information Processing Systems (NeurIPS)	2020
Robotics	IEEE International Conference on Robotics and Automation (ICRA)	2023
	International Conference on Intelligent Robots and Systems (IROS)	2017

Demos & Talks

Demo/Tool	*Open World Interactive Object Segmentation in 3D Point Clouds*	ECCV 2022
Talk	AI in Hungary	October 2022
Talk	ETH AI Center Post-Doc Symposium	May 2021
Google Talk	*Incremental Object Discovery in Time-Varying Image Collections (Host: Tobias Weyand)*	July 2016