Georgios Georgakis

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Education

PhD in Computer Science 2013-2020
George Mason University
Research Interests: Computer Vision, Robotics, Machine Learning
Thesis: 3D Model-Assisted Learning for Object Detection and Pose Estimation [pdf]
Advisor: Prof. Jana Kosecka

MSc in Computer Science 2013-2015
George Mason University

Diploma in Electronic and Computer Engineering 2006-2012
Technical University of Crete
Thesis: Field Landmark Recognition and Localization for the RobotStadium Online Soccer Competition [pdf]
Advisor: Associate Prof. Michail G. Lagoudakis

Positions

Part-time Lecturer Jan 2022-
ESE Department, University of Pennsylvania

Postdoctoral Researcher Mar 2020-
GRASP Lab. Advised by Dr. Kostas Daniilidis
CIS Department, University of Pennsylvania

Graduate Research Assistant Aug 2013-Dec 2019
Computer Vision and Robotics Lab
CS Department, George Mason University

Research Intern Summer 2019
United Imaging Intelligence, Cambridge MA

Ph.D Research Intern - Vision and Deep Learning Summer 2017, 2018
Siemens Corporate Technology, Princeton NJ

Papers

Cross-modal Map Learning for Vision and Language Navigation
G. Georgakis, K. Schmeckpeper, K. Wanchoo, S. Dan, E. Miltsakaki, D. Roth, and K. Daniilidis
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2022

Learning to Map for Active Semantic Goal Navigation
G. Georgakis*, B. Bucher*, K. Schmeckpeper, S. Singh, K. Daniilidis
International Conference on Learning Representations (ICLR) 2022

Uncertainty-driven Planner for Exploration and Navigation
G. Georgakis, B. Bucher, A. Arapin, K. Schmeckpeper, N. Matni, and K. Daniilidis
International Conference on Robotics and Automation (ICRA) 2022

Object-centric Video Prediction without Annotation
K. Schmeckpeper*, **G. Georgakis***, K. Daniilidis
International Conference on Robotics and Automation (ICRA) 2021

Hierarchical Kinematic Human Mesh Recovery
G. Georgakis*, R. Li*, S. Karanam, T. Chen, J. Kosecka, Z. Wu
European Conference on Computer Vision (ECCV) 2020

Robust Multi-modal 3D Patient Body Modeling
F. Yang, R. Li, **G. Georgakis**, S. Karanam, T. Chen, H. Ling, Z. Wu
Medical Image Computing and Computer Assisted Interventions (MICCAI) 2020

Learning Local RGB-to-CAD Correspondences for Object Pose Estimation
G. Georgakis, S. Karanam, Z. Wu, J. Kosecka
IEEE International Conference on Computer Vision (ICCV) 2019

End-to-end Learning for Keypoint Detection and Descriptor for Pose Invariant 3D Matching
G. Georgakis, S. Karanam, Z. Wu, J. Ernst, J. Kosecka
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2018

Label Propagation in RGB-D Video
Md. A. Reza, H. Zheng, **G. Georgakis**, J. Kosecka
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2017

Synthesizing Training Data for Object Detection in Indoor Scenes
G. Georgakis, A. Mousavian, A. C. Berg, J. Kosecka
Robotics: Science and Systems (RSS) 2017

A Contact Exploitative Approach to the Amazon Robotics Challenge
E. Dessalene, **G. Georgakis**, Md. A. Reza, Y. Li, Y. Ovcharik, A. Shapiro, J. Kosecka, D. Lofaro
Warehouse Picking Automation Workshop (ICRA) 2017

Multiview RGB-D Dataset for Object Instance Detection
G. Georgakis, Md. A. Reza, A. Mousavian, P. H. Le, J. Kosecka
International Conference on 3D Vision (3DV), 2016

RGB-D Multiview Object Detection with Object Proposals and Shape Context
G. Georgakis, Md. A. Reza, J. Kosecka
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2016

* Denotes equal contribution

Preprints / In preparation

Sample Efficient Tree-based Planning for Learned Prediction Models
K. Schmeckpeper, Y. Mao, **G. Georgakis**, W. Tang, and K. Daniilidis.
In preparation

Bridge Data: Boosting Generalization of Robotic Skills with Cross-Domain Datasets
F. Ebert*, Y. Yang*, K. Schmeckpeper, B. Bucher, **G. Georgakis**, K. Daniilidis, C. Finn, S. Levine
arXiv:2109.13396

Simultaneous Mapping and Target Driven Navigation
G. Georgakis, Y. Li, J. Kosecka
arXiv:1911.07980

Towards Robust RGB-D Human Mesh Recovery
R. Li, C. Cai, **G. Georgakis**, S. Karanam, T. Chen, Z. Wu
arXiv:1911.07383

Patents Pending

Systems and Methods for Human Pose and Mesh Recovery
Z. Wu, S. Karanam, C. Cai, **G. Georgakis**
US16/995,446, filed August 2020, Application no. US20210158028A1

Systems and Methods for Human Mesh Recovery
S. Karanam, Z. Wu, **G. Georgakis**
US16/863,382, filed April 2020, Application no. US20210158107A1

Learning Keypoints and Matching RGB Images to CAD Models
G. Georgakis, S. Karanam, Z. Wu, J. Ernst
PCT/US2019/053827, filed September 2019, Application no. WO2020086217

Matching RGB Images to CAD Models
G. Georgakis, S. Karanam, Z. Wu, J. Ernst
PCT/US2019/040913, filed July 2019, Application no. WO2020014170A1

Spare Part Identification Using a Locally Learned 3D Landmark Database
G. Georgakis, S. Karanam, Z. Wu, J. Ernst
PCT/US2018/049100, filed September 2018, Application no. WO2019094094A1

Learning View-invariant Local Patch Representations for Pose Estimation
G. Georgakis, S. Karanam, V. Manjunatha, K-C. Peng, Z. Wu, J. Ernst
PCT/US2018/013271, filed January 2018, Application no. WO2019139587A1

Training a Convolutional Neural Network using Task-irrelevant Data
V. Manjunatha, **G. Georgakis**, K-C. Peng, Z. Wu, J. Ernst
PCT/US2017/067766, filed December 2017, Application no. WO2019125453A1

Awards

Doctoral Consortium at ICCV 2019

Outstanding Graduate Teaching Assistant Award by the Department of Computer Science, George Mason University, for the academic year 2015-16

Selected Talks

Cross-modal Map Learning for Vision and Language Navigation
GRASP SFI Seminar Series, April 2022

Uncertainty-based Mapping and Navigation
MURI Review Meeting, October 2021

Object-centric Video Prediction without Annotation
Honda Curious Minded Machines Seminar Series, January 2021

3D Model-Assisted Learning for Object Detection and Pose Estimation
GRASP Seminar Series, Philadelphia PA, December 2019

Keypoint Learning for Pose Estimation
Siemens CT Intern Talk Series, Princeton NJ, August 2018

Synthesizing Training Data for Object Detection in Indoor Scenes
RSS Conference Talk, Cambridge MA, July 2017

RGB-D Multiview Object Detection with Object Proposals and Shape Context
IROS Conference Talk, Daejeon, South Korea, October 2016

Teaching

Instructor **at University of Pennsylvania**

ESE650: Learning in Robotics with Oleh Rybkin	Spring 2022

Guest Lecturer **at George Mason University**

CS112: Introduction to Programming - Python	Fall 2015
CS685: Autonomous Robotics	Fall 2018
CS687: Advanced Artificial Intelligence	Spring 2019
CS747: Deep Learning	Spring 2020

Graduate Teaching Assistant **at George Mason University**

CS112: Introduction to Programming - Python (Head TA)	Fall 2014 - Spring 2017
CS310: Data Structures - Java	Fall 2018
CS480: Introduction to Artificial Intelligence	Spring 2019

Mentoring & Collaborations

Master's Thesis
Siddharth Goel, Navigation to Multiple Semantic Targets in Novel Enviornments, Fall 2021
Shiyani Patel, Vector Graph Neural Network: Point Cloud Prediction into the Future, Fall 2021

Project Supervision
Siddharth Singh (Amazon, Fall 2020-Spring 2021)
Anton Arapin (Google, Summer 2021-ongoing)
Yihui Mao (Penn ROBO MSc, Summer 2021-ongoing)
Karan Wanchoo (Penn CIS MSc, Fall 2021-ongoing)
Sharon Shaji (Penn ROBO MSc, Spring 2022-ongoing)

PhD Student Collaborations
Bernadette Bucher (Penn CIS PhD, Spring 2020-ongoing)
Karl Schmeckpeper (Penn CIS PhD, Spring 2020-ongoing)
Frederick Ebert (UC Berkeley CS PhD, Spring 2021-Summer 2021)
Soham Dan (Penn CIS PhD, Fall 2021-ongoing)
Ron DiTullio (Penn Neuroscience PhD, Fall 2021-ongoing)
Katrina Ashton (Penn CIS PhD, Spring 2022-ongoing)

High School Student Supervision
Keith Cho (AEOP Apprenticeship, Summer 2021)
Andy Jiang (AEOP Apprenticeship, Summer 2021)
Hita Gupta (GRASP Intern, Fall 2021-ongoing)

Reviewer

Conferences: CVPR, CVPRW, ICCV, ECCV, WACV, ACCV, ICRA

Journals: TPAMI, RA-L, Pattern Recognition Letters, Transactions on Image Processing, Signal Processing: Image Communication, IEEE Access