Georgios Georgakis
NASA-Jet Propulsion Laboratory, Caltech
198-120, 4800 Oak Grove Dr, Pasadena, CA 91109
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Education

**PhD in Computer Science**
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**
George Mason University

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

Positions

**Robotics Technologist**
NASA-Jet Propulsion Laboratory
California Institute of Technology

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

**Part-time Lecturer**
ESE Department, University of Pennsylvania

**Graduate Research Assistant**
Computer Vision and Robotics Lab
CS Department, George Mason University

**Research Intern**
United Imaging Intelligence, Cambridge MA

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

Papers

*Icy Moon Surface Simulation and Stereo Depth Estimation for Sampling Autonomy*
R. Bhaskara, **G. Georgakis**, J. Nash, M. Cameron, J. Bowkett, A. Ansar, M. Majji, P. Backes
IEEE Aerospace Conference (AeroConf) 2024

*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
Robotics: Science and Systems (RSS) 2022
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

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

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

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

**Patents Awarded/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**

*Vision-based Navigation in Novel Environments*
Jet Propulsion Lab Section 347 Talks, Virtual, July 2022

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

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

*Object-centric Video Prediction without Annotation*
Honda Curious Minded Machines Seminar Series, Virtual, 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 Environments, Fall 2021
Shiyani Patel, Vector Graph Neural Network: Point Cloud Prediction into the Future, Fall 2021
Bo Wu, The Role of Mapping in Modern Robot Navigation Tasks, Spring 2023
Aditya Singh, Instruction-guided Path Generation on Allocentric Maps using Diffusion Models, Spring 2023

**Project Supervision**
Ramchander Bhaskara (JPL PhD Intern, Summer 2023-ongoing)
Dario Pisansi (JPL PhD Intern, Fall 2023-ongoing)
Aditya Singh (Penn CIS MSc, Fall 2022-ongoing)
Bo Wu (Penn ROBO MSc, Summer 2022-Spring 2023)
Anton Arapin (Google, Summer 2021-Spring 2022)
Karan Wanchoo (Penn CIS MSc, Fall 2021-Spring 2022)
Yihui Mao (Penn ROBO MSc, Summer 2021-Spring 2022)
Sharon Shaji (Penn ROBO MSc, Spring 2022)
Siddharth Singh (Amazon, Fall 2020-Spring 2021)

**PhD Student Collaborations**
Stefanos Pertigkiozoglou (Penn CIS PhD, Spring 2022-ongoing)
Katrina Ashton (Penn CIS PhD, Spring 2022-Fall 2023)
Ron DiTullio (Penn Neuroscience PhD, Fall 2021-Fall 2022)
Bernadette Bucher (Penn CIS PhD, Spring 2020-Spring 2023)
Karl Schmeckpeper (Penn CIS PhD, Spring 2020-Spring 2023)
Soham Dan (Penn CIS PhD, Fall 2021-Fall 2022)
Frederick Ebert (UC Berkeley CS PhD, Spring 2021-Summer 2021)
High School Student Supervision
Keith Cho (AEOP Apprenticeship, Summer 2021)
Andy Jiang (AEOP Apprenticeship, Summer 2021)
Hita Gupta (GRASP Intern, Fall 2021)

Reviewer

Conferences: NeurIPS, ICLR, CVPR, CVPRW, ICCV, ECCV, WACV, ACCV, ICRA, IROS

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