

CONTACT *Email:* johnlambert@gatech.edu
INFORMATION <https://johnwlambert.github.io/>

RESEARCH My research focuses on geometric and semantic understanding of 3D environments. I'm interested in
INTERESTS finding methods for producing 3D structured outputs in an unconstrained, open-world setting. I enjoy training deep neural networks on large data sets. I am seeking to develop artificially intelligent systems that will improve the quality of people's lives.

EDUCATION **Georgia Institute of Technology**
Doctor of Philosophy in Computer Science (Aug. 2018-2022).
Ph.D. Advisors: [Frank Dellaert](#), [James Hays](#). President's Fellow, 2018-2020.

Stanford University
Master of Science in Computer Science, with specialization in Artificial Intelligence (Jun. 2018).

Stanford University
Bachelor of Science in Computer Science, with specialization in Artificial Intelligence (Jan. 2018).
B.S. Minor, Mathematics.

PROGRAMMING Python, C/C++/CUDA, MATLAB, MPI, XHTML, CSS, Java, JavaScript.

FRAMEWORKS PyTorch, GTSAM, OpenGL, TensorFlow, AngularJS, Node.js, MongoDB, Flex, Bison.

RESEARCH **Hays Lab, Research Assistant**, Georgia Institute of Technology (Aug. 2018-Present)
EXPERIENCE 3D computer vision for robotics. Developing machine learning algorithms for multi-modal sensor data, with applications in multi-object tracking, trajectory forecasting, and high-definition 3D semantic mapping.

BORG Lab, Research Assistant, Georgia Institute of Technology (Oct. 2018-Present)
Developing a best-in-class wide-baseline Structure from Motion (SfM) system with Prof. Frank Dellaert.

Argo AI, Research Intern, Atlanta, Georgia (May 2020-Present)
High-impact computer vision research for self-driving technology research. Supervisor: Prof. James Hays.

Intel Labs, Research Intern, Santa Clara, California (May 2019-May 2020)
High-impact computer vision research at the Intelligent Systems Lab focused on domain generalization capabilities for semantic, panoptic, and instance segmentation. Our [MSeg](#) work was accepted to CVPR 2020. Supervisor: Vladlen Koltun.

Argo AI, Machine Learning Research Intern, Mountain View, California (June 2018-Aug. 2018)
Research at the intersection of mapping, perception and machine learning. Our [Argoverse](#) work was accepted to CVPR 2019. Collaborated with many to create the Argoverse self-driving datasets and was the main code contributor for the [argoverse-api](#) repository. Collaboration with Prof. James Hays (Georgia Tech), Prof. Simon Lucey (CMU), and Dr. Ersin Yumer.

Stanford Vision and Learning Lab, Research Assistant, Stanford, California (May 2017-June 2018)
Developed methods to utilize extra knowledge only available during training (*privileged information*) in neural networks. Showed how our model significantly increases sample efficiency during learning, resulting in higher accuracy with a large margin when the number of training examples is limited. Work focused on image classification (ImageNet) and machine translation and accepted to CVPR 2018. Worked under the supervision of Professor Silvio Savarese.

Stanford Vision Lab, Research Associate, Stanford, California (Jan. 2017-June 2017)
I developed self-supervised representation learning methods for human action recognition from RGB video input in the laboratory of Dr. Fei-Fei Li, Ph.D.

RESEARCH EXPERIENCE	Quantitative Imaging Lab, Research Assistant , Stanford, California (June 2016-Dec. 2016) Worked with Dr. Daniel Rubin to develop algorithms for organ lesion segmentation, detection in 3-D microscopy, and automatic clinical narrative generation from images.
TEACHING EXPERIENCE	Georgia Institute of Technology Teaching Assistant for CS 4476: Introduction to Computer Vision (Undergraduate Level), taught by Prof. Frank Dellaert. Fall 2019. Enrollment: 242. Designed new assignments and provided a guest lecture. Teaching Assistant for CS 6476A: Computer Vision (Graduate Level), taught by Prof. James Hays. Fall 2018. Enrollment: 202.
PAPERS IN SUBMISSION	J. Lambert , J. Hays. <i>Anonymous Submission</i> .
CONFERENCE PUBLICATIONS	J. Lambert* , Z. Liu*, O. Sener, J. Hays, V. Koltun. MSeg: A Composite Dataset for Multi-domain Semantic Segmentation . IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2020. [Video] M. Chang*, J. Lambert* , P. Sangkloy*, J. Singh*, A. Hartnett, D. Wang, P. Carr, S. Lucey, D. Ramanan, J. Hays. Argoverse: 3D Tracking and Forecasting with Rich Maps . IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019 (Oral). J. Lambert* , O. Sener*, and S. Savarese. Deep Learning Under Privileged Information Using Heteroscedastic Dropout . IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018 (Spotlight).
WORKSHOP PUBLICATIONS	J. Lambert* , O. Sener*, and S. Savarese. Deep Learning Under Privileged Information . Workshop on Bayesian Deep Learning, Neural Information Processing Systems (NIPS), 2017 (Spotlight). A. Hoogi*, J. Lambert* , Y. Zheng, D. Comaniciu, and D. Rubin. A Fully-Automated Pipeline for Detection and Segmentation of Liver Lesions and Pathological Lymph Nodes . Workshop on Machine Learning in Healthcare, Neural Information Processing Systems (NIPS), 2016.
PATENTS	J. Lambert , J. Hays. <i>Patent pending</i> .
WORK EXPERIENCE	Argo AI, Machine Learning Intern , Pittsburgh, Pennsylvania (June 2017-Sept. 2017) Developed, tested, and benchmarked real-time machine perception algorithms in C++11/14 for autonomous vehicles. Implemented a key portion of the tracking algorithm that was immediately deployed on-vehicle. Developed and presented research proposals to the company leadership for the next-generation sensor fusion perception system. Varian Medical Systems, Software Engineering Intern , Palo Alto, California (June-Aug. 2015) Developed probabilistic graphical models (PGMs) in order to predict advantageous treatment plans for lung cancer patients. Incorporated ontologies and implemented back-end Java and front-end AngularJS services to deliver the machine learning models in a point-of-care Cloud application to oncologists. The models and work were showcased in early 2016 as part of the 360 Oncology™ product launch. EAS Advisors LLC, Summer Analyst , New York, New York (June-Aug. 2012) Created models and investor presentations for non-deal and deal roadshows at an investment advisory firm. Performed market research in natural resource industries, compiled the results, and presented findings to potential investors. Capital requirements of projects ranged from \$2M-40M USD.

ACADEMIC TALKS	<p>MSeg: A Composite Dataset for Multi-domain Semantic Segmentation Invited Speaker, ROS World 2020 Conference, <i>Recent Advances in Robotic Perception</i>, November 2020. Invited Panelist Talk, Robust Vision Challenge Workshop, ECCV 2020, October 2020. [Video]</p> <p>Argoverse: 3D Tracking and Forecasting with Rich Maps Oral Presentation. Session on Learning, Physics, Theory, & Datasets, CVPR, June 2019. Long Beach, CA. Talk at Intel Labs, June 2019, Santa Clara CA.</p> <p>Deep Learning Under Privileged Information Spotlight Presentation. Session on Machine Learning for Computer Vision, CVPR, June 2018. SLC, UT. Spotlight Presentation. Bayesian Deep Learning Workshop, NIPS, Dec. 2017. Long Beach, CA.</p>																
PRESS COVERAGE	<p>Argoverse: 3D Tracking and Forecasting with Rich Maps Forbes Magazine. Argo AI And Waymo Release Automated Driving Data Sets. June 19, 2019. TechCrunch. Self-driving car startup Argo AI is giving researchers free access to its HD maps. June 19, 2019. CNET. Ford's Argo AI will release its HD maps for free to autonomy researchers. June 19, 2019.</p>																
SELECTED HONORS	<p>2nd Place, Robust Vision Challenge <i>Semantic Segmentation</i> Track, ECCV 2020. Runner-up, Argoverse 3D Tracking Challenge at the Machine Learning for Autonomous Driving Workshop, NeurIPS 2019 (Rank 2nd) Outstanding Reviewer Award, CVPR 2018 Travel Award, Bayesian Deep Learning Workshop, NIPS 2017 (8 awarded out of 68 accepted abstracts) President, Latter-day Saint Student Association (LDSSA) at Stanford University (2016-2017) 13th Place, USA Intercollegiate Rowing Association National Championship Regatta, Stanford University Varsity Crew Team (2012) National Merit Finalist and National AP Scholar (2011) Shell Oil Company Technical Scholarship Winner (2011) Eagle Scout, Silver Palm (2007)</p>																
LANGUAGES	Russian (ACTFL “Advanced High” Oral and Writing Proficiency); French (elementary proficiency)																
SERVICE ACTIVITIES	<p>Co-Organizer, Argoverse Competitions, Workshop on Autonomous Driving, CVPR 2020 [Video].</p> <p>Reviewer for the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018-2020. Reviewer for the International Conference on Computer Vision (ICCV), 2019. Reviewer for the European Conference on Computer Vision (ECCV), 2018, 2020.</p> <p>Volunteer Mission, Rostov-na-Donu, Russia (Aug. 2012-Sept. 2014) Full-time missionary and volunteer representative of church. Taught lessons in Russian to people daily while leading and training a group of 20 missionaries in the cities of Volgograd, Astrakhan, and Volzhsky. Organized and taught free English language classes and carried out community service projects.</p>																
MENTORED STUDENTS	<p>Master’s Students</p> <table> <tr> <td>2018 – 2019</td><td>Alex Butenko (CS, Georgia Tech)</td></tr> <tr> <td>2019 – 2019</td><td>Vivek Vanga (CS, Georgia Tech)</td></tr> <tr> <td>2019 – present</td><td>Hemanth Chittanuru (CS, Georgia Tech)</td></tr> <tr> <td>2019 – present</td><td>Ayush Baid (CS, Georgia Tech)</td></tr> <tr> <td>2020 – present</td><td>Chen Liu (CS, Georgia Tech)</td></tr> <tr> <td>2020 – present</td><td>Shubhangi Upasani (CS, Georgia Tech)</td></tr> <tr> <td>2020 – present</td><td>Jeevanjot Singh (CS, Georgia Tech)</td></tr> </table> <p>Ph.D. Students</p> <table> <tr> <td>2020 – present</td><td>Andrey Pak (Robotics, Georgia Tech)</td></tr> </table>	2018 – 2019	Alex Butenko (CS, Georgia Tech)	2019 – 2019	Vivek Vanga (CS, Georgia Tech)	2019 – present	Hemanth Chittanuru (CS, Georgia Tech)	2019 – present	Ayush Baid (CS, Georgia Tech)	2020 – present	Chen Liu (CS, Georgia Tech)	2020 – present	Shubhangi Upasani (CS, Georgia Tech)	2020 – present	Jeevanjot Singh (CS, Georgia Tech)	2020 – present	Andrey Pak (Robotics, Georgia Tech)
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