

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

BACKGROUND Machine learning, computer vision, and robotics leader with significant experience. Develops cutting-edge technology in these fields and pushes the state-of-the-art in top conferences such as CVPR, ECCV, and NeurIPS. Experience in leading research teams to solve open-ended problems.

Technical depth in image understanding (object classification and segmentation), 3D perception (3D reconstruction, 3D object pose/shape estimation and tracking), SLAM (mapping, localization), and simulation.

EDUCATION **Georgia Institute of Technology**  
*Doctor of Philosophy in Computer Science* (Aug. 2018 - Mar. 2022).  
Ph.D. Advisors: [James Hays](#), [Frank Dellaert](#). President's Fellow, 2018-2022.  
Thesis Title: *Deep Learning for Building and Validating Geometric and Semantic Maps*.  
Thesis Committee: James Hays, Frank Dellaert, Simon Lucey, Zsolt Kira, Cedric Pradalier.

**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 (Dec. 2017).  
B.S. Minor, Mathematics.

SELECTED **Waymo LLC, Research Scientist** (Mar. 2022-Present)  
WORK High-impact machine learning research for autonomous driving.  
EXPERIENCE

RESEARCH **Hays Lab, Research Assistant**, Georgia Institute of Technology (Aug. 2018-Mar. 2022)  
EXPERIENCE 3D computer vision for robotics. Developing machine learning algorithms for multi-modal sensor data, with applications in 3d object detection, 3d multi-object tracking, trajectory forecasting, high-definition 3D semantic mapping, HD map change detection, and stereo vision.

**BORG Lab, Research Assistant**, Georgia Institute of Technology (Oct. 2018-Mar. 2022)  
Structure from Motion (SfM) and 3d scene reconstruction research with Prof. Frank Dellaert.

**Zillow Research, Research Intern**, Cambridge, Massachusetts (May 2021 - November 2021).  
High-impact computer vision research for 3d reconstruction. Work was accepted to ECCV 2022 (SALVe) and patent pending. Supervisor: Sing Bing Kang.

**Argo AI, Research Intern**, Atlanta, Georgia (May 2020-May 2021)  
High-impact computer vision research for self-driving technology research. Supervisor: Prof. James Hays. Work resulted in two accepted papers at NeurIPS 2021.

**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.

ADDITIONAL  
RESEARCH  
EXPERIENCE

**Argo AI, Machine Learning Research Intern**, Mountain View, California (June 2018-May. 2019)  
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), Prof. Deva Ramanan (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 was 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.

**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 6476A: Computer Vision](#) (Graduate Level), taught by Prof. James Hays. Spring 2021. Enrollment: 180. Designed new assignments and provided a guest lecture.

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.

CONFERENCE  
PUBLICATIONS

Nico Montali, **John Lambert**, Paul Mouglin, Alex Kuefler, Nick Rhinehart, Michelle Li, Cole Gulino, Tristan Emrich, Zoey Yang, Shimon Whiteson, Brandyn White, Dragomir Anguelov.  
[The Waymo Open Sim Agents Challenge](#). Proceedings of the Neural Information Processing Systems Track on Datasets and Benchmarks (NeurIPS), 2023 (Spotlight).

**J. Lambert**, Y. Li, I. Boyadzhiev, L. Wixson, W. Hutchcroft, M. Narayana, J. Hays, F. Dellaert, S.B. Kang. [SALVe: Semantic Alignment Verification for Floorplan Reconstruction from Sparse Panoramas](#). European Conference on Computer Vision (ECCV), 2022.

**J. Lambert**, J. Hays. [Trust, but Verify: Cross-Modality Fusion for HD Map Change Detection](#). Proceedings of the Neural Information Processing Systems Track on Datasets and Benchmarks (NeurIPS), 2021.

Benjamin Wilson, William Qi, Tanmay Agarwal, **J. Lambert**, Jagjeet Singh, Siddhesh Khandelwal, Bowen Pan, Ratnesh Kumar, Andrew Hartnett, Jhony Kaesemodel Pontes, Deva Ramanan, Peter Carr, James Hays. [Argoverse 2.0: Next Generation Datasets for Self-Driving Perception and Forecasting](#). Proceedings of the Neural Information Processing Systems Track on Datasets and Benchmarks (NeurIPS), 2021.

**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).

CONFERENCE PUBLICATIONS	<b>J. Lambert*</b> , O. Sener*, and S. Savarese. <i>Deep Learning Under Privileged Information Using Heteroscedastic Dropout</i> . IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018 (Spotlight).
PREPRINTS	Ayush Baid*, <b>John Lambert*</b> , Travis Driver*, Akshay Krishnan*, Hayk Stepanyan, Frank Dellaert. <i>Distributed Global Structure-from-Motion with a Deep Front-End</i> . arXiv, 2023.
JOURNAL PUBLICATIONS	<b>J. Lambert*</b> , Z. Liu*, O. Sener, J. Hays, V. Koltun. <i>MSeg: A Composite Dataset for Multi-domain Semantic Segmentation</i> . Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2022.
WORKSHOP PUBLICATIONS	<b>J. Lambert*</b> , O. Sener*, and S. Savarese. <i>Deep Learning Under Privileged Information</i> . Workshop on Bayesian Deep Learning, Neural Information Processing Systems (NIPS), 2017 (Spotlight).  A. Hoogi*, <b>J. Lambert*</b> , Y. Zheng, D. Comaniciu, and D. Rubin. <i>A Fully-Automated Pipeline for Detection and Segmentation of Liver Lesions and Pathological Lymph Nodes</i> . Workshop on Machine Learning in Healthcare, Neural Information Processing Systems (NIPS), 2016.
PATENTS	<b>J. Lambert</b> , Y. Li, L. Wixson, I. Boyadzhiev. Zillow Group. <i>Patent pending</i> . (No. 17/585,433).  <b>J. Lambert</b> , J. Hays., Francesco Ferroni, Richard Kwant. Argo AI. <i>Patent pending</i> . (No. 17/169,970).
PROGRAMMING	Python, C/C++/CUDA, MATLAB, MPI, XHTML, CSS, Java, JavaScript.
FRAMEWORKS	PyTorch, TensorFlow, GTSAM, JAX, OpenGL, Dask, AngularJS, Node.js, MongoDB, Flex, Bison.
ADDITIONAL WORK EXPERIENCE	<b>Argo AI, Machine Learning Intern</b> , 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.  <b>Varian Medical Systems, Software Engineering Intern</b> , Palo Alto, California (June-Aug. 2015) Developed probabilistic graphical models (PGMs) in order to predict advantageous treatment plans for lung cancer patients. Implemented corresponding front-end and back-end infrastructure (AngularJS and Java) 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.  <b>EAS Advisors LLC, Summer Analyst</b> , 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	<b>Simulation Agents</b> Invited Talk at IROS 2023 <a href="#">Workshop on Traffic Agent Modeling for Autonomous Driving Simulation</a> , October 2023.  <b>GTSFM: Georgia Tech Structure from Motion</b> Talk at Skydio, January 2022 (Remote).  <b>Trust, but Verify: Cross-Modality Fusion for HD Map Change Detection</b> Talk at Cruise, December 2021 (Remote). Talk at Tesla AI, December 2021 (Remote). Talk at Waymo, January 2022 (Remote).  <b>MSeg: A Composite Dataset for Multi-domain Semantic Segmentation</b> Invited Speaker, <a href="#">ROS World 2020</a> Conference, <i>Recent Advances in Robotic Perception</i> , November 2020. Invited Panelist Talk, Robust Vision Challenge Workshop, ECCV 2020, October 2020. <a href="#">[Video]</a>

ACADEMIC TALKS	<p><b>Argoverse: 3D Tracking and Forecasting with Rich Maps</b>          Oral Presentation. Session on Learning, Physics, Theory, &amp; Datasets, CVPR, June 2019. Long Beach, CA.          Talk at Intel Labs, June 2019, Santa Clara CA.</p> <p><b>Deep Learning Under Privileged Information</b>          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><b>Argoverse: 3D Tracking and Forecasting with Rich Maps</b>          Forbes Magazine. <a href="#">Argo AI And Waymo Release Automated Driving Data Sets</a>. June 19, 2019.          TechCrunch. <a href="#">Self-driving car startup Argo AI is giving researchers free access to its HD maps</a>. June 19, 2019.          CNET. <a href="#">Ford's Argo AI will release its HD maps for free to autonomy researchers</a>. 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 2021 <a href="#">[Video]</a>.          Co-Organizer, Argoverse Competitions, Workshop on Autonomous Driving, CVPR 2020 <a href="#">[Video]</a>.          Reviewer for the IEEE Conference on Computer Vision and Pattern Recognition (CVPR).          Reviewer for the International Conference on Computer Vision (ICCV).          Reviewer for the European Conference on Computer Vision (ECCV).          Reviewer for Neural Information Processing Systems (NeurIPS).</p> <p><b>Volunteer Mission</b>, 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><b>Undergraduate Students</b></p> <p>Jan. 2021 – Mar. 2022     Adi Singh (CS, Georgia Tech)  <i>Topic: RasterNet: Online Bird’s Eye View Mapping using Transformers</i></p> <p>Jan. 2021 – Mar. 2022     Anshul Ahluwalia (CS, Georgia Tech)  <i>Topic: Transformer Pointer Networks for Autoregressive Lane Polyline Estimation</i></p> <p><b>Master’s Students</b></p> <p>Dec. 2018 – Aug. 2019     Alex Butenko (CS, Georgia Tech)  <i>Topic: Deep Front Ends for SfM</i></p> <p>Aug. 2019 – Dec. 2019     Vivek Vanga (CS, Georgia Tech)  <i>2nd place, Argoverse 1.1 3D Tracking NeurIPS Competition, Nov. 2019</i></p> <p>Aug. 2019 – Dec. 2020     Hemanth Chittanuru (CS, Georgia Tech)  <i>Topic: End-to-End 3d Object Tracking</i></p>

MENTORED  
STUDENTS

Jan. 2020 – Dec. 2020

Chen Liu (CS, Georgia Tech)  
*Topic: End-to-End 3d Object Tracking*

Aug. 2020 – May 2021

Bhavya Bahl (CS, Georgia Tech)  
*Topic: A Study of Cross-Dataset Transfer Learning for 3d Object Detection*  
*1st place, Argoverse 1.1 3D Object Detection Leaderboard*

Dec. 2019 – May 2021

Ayush Baid (CS, Georgia Tech)  
*Topic: Deep Front Ends for SfM*  
*Topic: Georgia Tech Structure from Motion (GTSM)*

Jan. 2020 – May 2021

Shubhangi Upasani (CS, Georgia Tech)  
*Topic: Deep Directed Lane Polyline Estimation Using Attraction Fields*

Jan. 2020 – May 2021

Jeevanjot Singh (CS, Georgia Tech)  
*Topic: The Argoverse 3d Lane Estimation Benchmark*

## Ph.D. Students

Jan. 2020 – Dec. 2020

Andrey Pak (Robotics, Georgia Tech)  
*Topic: End-to-End 3d Object Tracking*  
*2nd place on Argoverse 1.1 3D Tracking CVPR '20 Competition (Hon. Mention)*