# Alan Z. Luo

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#### Education

2018-present	<b>Stanford University</b> , Doctor of Philosophy in Computer Science Advisor: Fei-Fei Li, GPA: 3.99/4.00
2015-2018	<b>Stanford University</b> , Master of Science in Computer Science Specialization in Artificial Intelligence
	Advisor: Fei-Fei Li, GPA: 3.99/4.00

2012-2015 **University of Illinois Urbana-Champaign**, Bachelor of Science in Computer Engineering Minor in Mathematics Advisors: Gabriel Popescu, Narendra Ahuja, Jia-Bin Huang, GPA: 3.94/4.00

#### **Research Interests**

Computer Vision: video understanding, video-language models, activity recognition

Machine Learning: self-supervised learning, transfer learning, compositional generalization, multimodal learning, differential privacy

#### Work Experience

2021	<b>Nvidia Machine Learning</b> , Research Intern Proposed a paradigm for training differentially-private models that could be scaled to large-scale vision tasks.
2019	<b>Facebook Research</b> , Research Intern Developed a self-supervised learning model for reconstructing 3D objects from videos.
2017	<b>Google Cloud AI</b> , Research Intern Proposed a method for detecting and classifying human activities in multimodal videos based on the knowledge distillation of privileged information.
2016	<b>Amazon A9</b> , Research Intern Designed and implemented an RNN-based optical character recognition (OCR) system.
2015	<b>Yahoo</b> , Software Engineering Intern Developed and extended web applications and user interfaces for the Yahoo homepage using React.

## **Publications**

**CONFERENCE** Publications

[1]	MOMA-LRG: Language-Refined Graphs for Multi-Object Multi-Actor Activity Parsing <u>Z. Luo</u> , Z. Durante <sup>*</sup> , L. Li <sup>*</sup> , W. Xie, R. Liu, E. Jin, Z. Huang, L.Y. Li, J. Wu, J.C. Niebles, E. Adeli, and L. Fei-Fei. <i>Track on Datasets and Benchmarks, Conference on Neural Information Processing Systems (NeurIPS).</i> 2022.
[2]	MOMA: Multi-Object Multi-Actor Activity Parsing <u>Z. Luo*</u> , W. Xie*, S. Kapoor, Y. Liang, M. Cooper, J.C. Niebles, E. Adeli, and L. Fei-Fei. <i>Conference on Neural</i> <i>Information Processing Systems (NeurIPS)</i> . 2021.
[3]	Scalable Differential Privacy with Sparse Network Fine-Tuning <u>Z. Luo*</u> , D. Wu, E. Adeli, and L. Fei-Fei. <i>IEEE Conference on Computer Vision and Pattern Recognition (CVPR)</i> . 2021.
[4]	Graph Distillation for Action Detection with Privileged Information <u>Z. Luo*</u> , JT. Hsieh, L. Jiang, J.C. Niebles, and L. Fei-Fei. <i>European Conference on Computer Vision (ECCV)</i> . 2018.
[5]	DF-Net: Unsupervised Joint Learning of Depth and Flow using Cross-Network Consistency Y. Zou, <u>Z. Luo</u> , and JB. Huang. <i>European Conference on Computer Vision (ECCV)</i> . 2018.
[6]	Computer Vision-Based Descriptive Analytics of Seniors' Daily Activities for Long-Term Health Monitoring <u>Z. Luo</u> *, JT. Hsieh*, N. Balachandar, S. Yeung, G. Pusiol, J. Luxenberg, G. Li, LJ. Li, N.L. Downing, A. Milstein, and L. Fei-Fei. <i>Machine Learning for Healthcare (MLHC)</i> . 2018.
[7]	Label Efficient Learning of Transferable Representations across Domains and Tasks <u>Z. Luo</u> , Y. Zou, J. Hoffman, and L. Fei-Fei. <i>Neural Information Processing Systems (NeurIPS)</i> . 2017.
[8]	Unsupervised Learning of Long-Term Motion Dynamics for Videos <u>Z. Luo</u> , B. Peng, A. Alahi, DA. Huang, and L. Fei-Fei. <i>IEEE Conference on Computer Vision and Pattern</i> <i>Recognition (CVPR)</i> . 2017.
[9]	Towards Vision-Based Smart Hospitals: A System for Tracking and Monitoring Hand Hygiene Compliance A. Haque, M. Guo, A. Alahi, S. Yeung, <u>Z. Luo</u> , A. Rege, A. Singh, J. Jopling, N.L. Downing, W. Beninati, T. Platchek, A. Milstein, and L. Fei-Fei. <i>Machine Learning for Healthcare (MLHC)</i> . 2017.
[10]	Computer Vision-based Approach to Maintain Independent Living for Seniors <u>Z. Luo</u> , A. Rege, G. Pusiol, A. Milstein, L. Fei-Fei, and N.L. Downing. <i>American Medical Informatics Associ-</i> <i>ation (AMIA) Annual Symposium</i> . 2017.
[11]	Towards Viewpoint Invariant 3D Human Pose Estimation A. Haque, <u>Z. Luo*</u> , B. Peng*, A. Alahi, S. Yeung, and L. Fei-Fei. <i>European Conference on Computer Vision</i> (ECCV). 2016.
[12]	Vision-Based Hand Hygiene Monitoring in Hospitals S. Yeung, A. Alahi, A. Haque, B. Peng, <u>Z. Luo</u> , A. Singh, T. Platchek, A. Milstein, and L. Fei-Fei. <i>American</i> <i>Medical Informatics Association (AMIA) Annual Symposium</i> . 2016.
[13]	High Throughput Imaging of Blood Smears using White Light Diffraction Phase Microscopy H. Majeed, M. Kandel, B. Bhadhuri, K. Han, <u>Z. Luo</u> , K. Tangella, and G. Popescu. <i>SPIE Quantitative Phase Imaging</i> (Vol. 9336, pp. 201-205). 2015.
[14]	Diagnosis of Breast Cancer Biopsies using Quantitative Phase Imaging H. Majeed, M. Kandel, K. Han, <u>Z. Luo</u> , V. Macias, K. Tangella, A. Balla, and G. Popescu. <i>SPIE Quantitative</i> <i>Phase Imaging</i> (Vol. 9336, pp. 170-175). 2015.
[15]	C++ Software Integration for a High-throughput Phase Imaging Platform M. Kandel, <u>Z. Luo</u> , K. Han, and G. Popescu. <i>SPIE Quantitative Phase Imaging</i> (Vol. 9336, pp. 91-98). 2015.

#### JOURNAL PUBLICATIONS

[16]	Harnessing the Power of Smart and Connected Health to Tackle COVID-19: IoT, AI, Robotics, and Blockchain for a Better World
	F. Firouzi, B. Farahani, M. Daneshmand, K. Grise, J.S. Song, R. Saracco, L. Lu Wang, K. Lo, P. Angelov, E. Soares, PS. Loh, Z. Talebpour, R. Moradi, M. Goodarzi, H. Ashraf, M. Talebpour, A. Talebpour, L. Romeo, R. Das, H. Heidari, D. Pasquale, J. Moody, C. Woods, E.S. Huang, P. Barnaghi, M. Sarrafzadeh, R. Li, K.L. Beck, O. Isayev, N. Sung, and <u>A. Luo</u> . <i>IEEE Internet of Things Journal</i> , 8(16), 12826-12846. 2021.
[17]	Ethical Issues in Using Ambient Intelligence in Health-Care Settings N. Martinez-Martin, <u>Z. Luo</u> , A. Kaushal, E. Adeli, A. Haque, S.S. Kelly, S. Wieten, M.K. Cho, D. Magnus, L. Fei-Fei, K. Schulman, and A. Milstein. <i>The Lancet Digital Health</i> , 3(2), e115-e123. 2021.
[18]	Label-Free Tissue Scanner for Colorectal Cancer Screening M.E. Kandel, S. Sridharan, J. Liang, <u>Z. Luo</u> , K. Han, M. Virgilia, A. Shah, R. Patel, K. Tangella, A. Kajdacsy- Balla, G. Guzman, and G. Popescu. <i>Journal of biomedical optics</i> , 22(6), 066016. 2017.
[19]	Breast Cancer Diagnosis using Spatial Light Interference Microscopy H. Majeed, M. Kandel, K. Han, <u>Z. Luo</u> , V. Macias, K. Tangella, A. Balla, and G. Popescu. <i>Journal of biomedical optics</i> , 20(11), 111210-111210. 2015.
	Workshop Publications
[20]	Vision-Based Gait Analysis for Senior Care E. Darke, A. Sayana, K. Shen, D. Xue, JT. Hsieh, <u>Z. Luo</u> , LJ. Li, N.L. Downing, A. Milstein, and L. Fei-Fei. <i>Workshop on Machine Learning in Healthcare, Neural Information Processing Systems (NeurIPS)</i> , 2018.
[21]	Vision-Based Hand Hygiene Monitoring in Hospitals S. Yeung, A. Alahi, <u>Z. Luo</u> , B. Peng, A. Haque, A. Singh, T. Platchek, A. Milstein, and L. Fei-Fei. <i>Workshop on</i> <i>Machine Learning in Healthcare, Neural Information Processing Systems (NeurIPS)</i> , 2015.

## Teaching

Fall 2021	Instructor, AI-Assisted Health Care (CS337/MED277), Stanford University
Winter 2019	Head Course Assistant, AI-Assisted Health Care (CS337/MED277), Stanford University
Fall 2018	Head Course Assistant, AI-Assisted Health Care (CS337/MED277), Stanford University
Spring 2017	Course Assistant, Convolutional Neural Networks (CS231N), Stanford University
Winter 2017	Course Assistant, Natural Language Processing (CS224N), Stanford University
Fall 2016	Head Course Assistant, Computer Vision (CS131), Stanford University
Spring 2016	Course Assistant, Probability (CS109), Stanford University
Winter 2016	Course Assistant, Probability (CS109), Stanford University
Fall 2015	Head Course Assistant, Computer Vision (CS131), Stanford University

#### Large-Scale Projects

- <sup>2015-present</sup> **ICU Clinical Pathway Support**, Project Lead, Partnership in AI-Assisted Care, Stanford University Developing the Clinical Behavior Atlas, a new and high-throughput framework for understanding of clinical care delivery with vision-based ambient intelligence.
- AI-Assisted Senior Care, Project Lead, Partnership in AI-Assisted Care, Stanford University Designed and implemented an integrated solution for the remote monitoring, assessment and support of seniors living independently at home using smart sensors and computer vision algorithms.

# Service Activities

	Organizer
2022	International Challenge on Compositional and Multimodal Perception, ECCV
	Conference Workshop Program Committee
2022	Socially Responsible Machine Learning, ICLR
2021	Socially Responsible Machine Learning, ICML
	Conference Program Committee and Reviewer
	AAAI Conference on Artificial Intelligence (AAAI)
	IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
	European Conference on Computer Vision (ECCV)
	IEEE International Conference on Computer Vision (ICCV)
	International Conference on Learning Representations (ICLR)
	International Conference on Machine Learning (ICML)
	Machine Learning for Healthcare (MLHC)
	Conference on Neural Information Processing Systems (NeurIPS)
	Journal Reviewer
	Journal of Biomedical and Health Informatics (JBHI) IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)

### Honors

2020-2022	Google Cloud Credit Grants, Stanford HAI (every year)
2020	Seed Research Grants, Stanford HAI
2019	Top Reviewer Award, NeurIPS
2018	Travel Grants, NeurIPS
2015-2017	Top 7% students offered full assistantship, Stanford CS
2013	PURE Best Research Award, UIUC
2012-2015	Dean's List and James Scholar Honors Program for academic achievement, UIUC (every semester)

# Press Coverage

2021/09	IEEE Signal Processing Magazine. Smart home technologies are saving money and lives.
2020/09	Wall Street Journal Pro. Coming to hospitals: the sensors will see you now.
2020/05	Harvard Business Review. Fei-Fei Li's mission to transform healthcare AI.
2020/04	VentureBeat. Stanford researchers propose AI in-home system that can monitor for coronavirus symptoms.
2020/04	Synced Review. Fei-Fei Li proposes AI-assisted elder care solution at Stanford-hosted virtual conference on
	COVID-19 and AI.
2015/10	SPIE Professional Magazine. Auto image-analysis system tested for cancer diagnosis.
2015/08	SPIE Professional Magazine. New optical method promises faster, more accurate diagnosis of breast cancer.

### Skills

**Programming Languages**: Python, C++, C, Java, x86 Assembly, Matlab, VHDL, Lua, Arduino, JavaScript, Swift, SQL, Ruby, Go, LaTex, R

**Web Development**: React, HTML, CSS (Sass/SCSS, Less, Atomic CSS), Bootstrap, jQuery, Node.js, Jinja2, MySQL, PHP, Flask

Libraries and Platforms: PyTorch, Tensorflow, Torch, Caffe, OpenCV, CUDA, Qt, Android, iOS, OpenGL, Boost, FPGA, Google Tango

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