

## Chenxi Liu

---

CONTACT INFORMATION	<b>Waymo LLC</b> Research Scientist	<a href="mailto:cxliu@waymo.com">cxliu@waymo.com</a> <a href="https://cs.jhu.edu/~cxliu/">https://cs.jhu.edu/~cxliu/</a>
EDUCATION	<b>Johns Hopkins University</b> Ph.D. in Computer Science Advisor: Alan Yuille Committee: Gregory Hager, Fei-Fei Li	2016 - 2020
	<b>University of California, Los Angeles</b> M.S. in Statistics Advisor: Alan Yuille GPA: 3.92	2015 - 2016
	<b>Rice University</b> Exchange Student in Electrical and Computer Engineering GPA: 3.98	Fall 2013
	<b>Tsinghua University</b> B.E. in Automation Minor in Economics GPA: 92/100    Ranking: 3/145	2011 - 2015
EXPERIENCE	<b>Facebook AI Research</b> , Menlo Park, CA Research Intern Mentors: Saining Xie, Ross Girshick, Piotr Dollár, Kaiming He	Summer 2019
	<b>Google</b> , Sunnyvale, CA Software Engineering Intern Mentors: Fei-Fei Li, Wei Hua, Liang-Chieh Chen	Summer 2018
	<b>Google</b> , Sunnyvale, CA Software Engineering Intern Mentors: Jia Li, Wei Hua, Jonathan Huang, Jonathon Shlens, Barret Zoph, Kevin Murphy, Fei-Fei Li	Fall 2017
	<b>Adobe Research</b> , San Jose, CA Research Scientist Intern Mentors: Zhe Lin, Xiaohui Shen, Jimei Yang, Xin Lu	Summer 2016
	<b>Toyota Technological Institute at Chicago</b> , Chicago, IL Research Assistant Advisors: Gregory Shakhnarovich, Michael Maire	Summer 2015
	<b>University of Toronto</b> , Toronto, ON Research Assistant Advisors: Raquel Urtasun, Sanja Fidler	Summer 2014
TEACHING	<b>Johns Hopkins University</b> Role: Teaching Assistant Course: Probabilistic Models of the Visual Cortex	Fall 2018

Instructor: Alan Yuille  
Lectures: Bayes Decision Theory, Vision and Language

## PUBLICATIONS

Scott Ettinger, Shuyang Cheng, Benjamin Caine, **Chenxi Liu**, Hang Zhao, Sabeek Pradhan, Yuning Chai, Ben Sapp, Charles Qi, Yin Zhou, Zoey Yang, Aurelien Chouard, Pei Sun, Jiquan Ngiam, Vijay Vasudevan, Alexander McCauley, Jonathon Shlens, and Dragomir Anguelov. 2021. Large Scale Interactive Motion Forecasting for Autonomous Driving : The Waymo Open Motion Dataset. In *Proceedings of the IEEE International Conference on Computer Vision (ICCV)*. IEEE Computer Society, Online. **(Oral)**

Jiquan Ngiam, Benjamin Caine, Vijay Vasudevan, Zhengdong Zhang, Hao-Tien Lewis Chiang, Jeffrey Ling, Rebecca Roelofs, Alex Bewley, **Chenxi Liu**, Ashish Venugopal, David Weiss, Ben Sapp, Zhifeng Chen, and Jonathon Shlens. 2021. Scene Transformer: A unified multi-task model for behavior prediction and planning. *CoRR*, [abs/2106.08417](https://arxiv.org/abs/2106.08417).

Zefan Li, **Chenxi Liu**, Alan Yuille, Bingbing Ni, Wenjun Zhang, and Wen Gao. 2021. Progressive Stage-wise Learning for Unsupervised Feature Representation Enhancement. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*. IEEE Computer Society, Online.

Alan Yuille and **Chenxi Liu**. 2021. Deep Nets: What have they ever done for Vision?. *International Journal of Computer Vision*. 129 (3), pages 781-802.

**Chenxi Liu**, Piotr Dollár, Kaiming He, Ross Girshick, Alan Yuille, and Saining Xie. 2020. Are Labels Necessary for Neural Architecture Search?. In *Proceedings of European Conference on Computer Vision*. Springer, Online, pages 798-813. **(Spotlight)**

Michelle Shu, **Chenxi Liu**, Weichao Qiu, and Alan Yuille. 2020. Identifying Model Weakness with Adversarial Examiner. In *Proceedings of the Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI)*. AAAI Press, New York, New York, pages 11998-12006.

Siyuan Qiao, Huiyu Wang, **Chenxi Liu**, Wei Shen, and Alan Yuille. 2019. Rethinking Normalization and Elimination Singularity in Neural Networks. *CoRR*, [abs/1911.09738](https://arxiv.org/abs/1911.09738).

Zhuotun Zhu, **Chenxi Liu**, Dong Yang, Alan Yuille, and Daguang Xu. 2019. V-NAS: Neural Architecture Search for Volumetric Medical Image Segmentation. In *Proceedings of the IEEE International Conference on 3D Vision (3DV)*. IEEE Computer Society, Quebec City, Canada, pages 240-248.

Siyuan Qiao, Huiyu Wang, **Chenxi Liu**, Wei Shen, and Alan Yuille. 2019. Weight Standardization. *CoRR*, [abs/1903.10520](https://arxiv.org/abs/1903.10520).

**Chenxi Liu**, Liang-Chieh Chen, Florian Schroff, Hartwig Adam, Wei Hua, Alan Yuille, and Li Fei-Fei. 2019. Auto-DeepLab: Hierarchical Neural Architecture Search for Semantic Image Segmentation. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*. IEEE Computer Society, Long Beach, California, pages 82-92. **(Oral)**

Xiaohui Zeng, **Chenxi Liu**, Yu-Siang Wang, Weichao Qiu, Lingxi Xie, Yu-Wing Tai, Chi Keung Tang, and Alan Yuille. 2019. Adversarial Attacks Beyond the Image Space. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*. IEEE Computer Society, Long Beach, California, pages 4302-4311. **(Oral)**

Runtao Liu, **Chenxi Liu**, Yutong Bai, and Alan Yuille. 2019. CLEVR-Ref+: Diagnosing Visual Reasoning with Referring Expressions. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*. IEEE Computer Society, Long Beach, California, pages 4185-4194.

**Chenxi Liu**, Barret Zoph, Maxim Neumann, Jonathon Shlens, Wei Hua, Li-Jia Li, Li Fei-Fei, Alan Yuille, Jonathan Huang, and Kevin Murphy. 2018. Progressive Neural Architecture Search. In *Proceedings of European Conference on Computer Vision*. Springer, Munich, Germany, pages 19-35. **(Oral)**

Siyuan Qiao, **Chenxi Liu**, Wei Shen, and Alan Yuille. 2018. Few-Shot Image Recognition by Predicting Parameters from Activations. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*. IEEE Computer Society, Salt Lake City, Utah, pages 7229-7238. **(Spotlight)**

Yu-Siang Wang, **Chenxi Liu**, Xiaohui Zeng, and Alan Yuille. 2018. Scene Graph Parsing as Dependency Parsing. In *Proceedings of the 2018 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT)*. Association for Computational Linguistics, New Orleans, Louisiana, pages 397-407. **(Oral)**

**Chenxi Liu**, Zhe Lin, Xiaohui Shen, Jimei Yang, Xin Lu, and Alan Yuille. 2017. Recurrent Multimodal Interaction for Referring Image Segmentation. In *Proceedings of the IEEE International Conference on Computer Vision (ICCV)*. IEEE Computer Society, Venice, Italy, pages 1280-1289.

Yan Wang, Lingxi Xie, **Chenxi Liu**, Siyuan Qiao, Ya Zhang, Wenjun Zhang, Qi Tian, and Alan Yuille. 2017. SORT: Second-Order Response Transform for Visual Recognition. In *Proceedings of the IEEE International Conference on Computer Vision (ICCV)*. IEEE Computer Society, Venice, Italy, pages 1368-1377.

Siyuan Qiao, Wei Shen, Weichao Qiu, **Chenxi Liu**, and Alan Yuille. 2017. ScaleNet: Guiding Object Proposal Generation in Supermarkets and Beyond. In *Proceedings of the IEEE International Conference on Computer Vision (ICCV)*. IEEE Computer Society, Venice, Italy, pages 1809-1818.

**Chenxi Liu**, Junhua Mao, Fei Sha, and Alan Yuille. 2017. Attention Correctness in Neural Image Captioning. In *Proceedings of the Thirty-First AAAI Conference on Artificial Intelligence (AAAI)*. AAAI Press, San Francisco, California, pages 4176-4182.

**Chenxi Liu\***, Alexander Schwing\*, Kaustav Kundu, Raquel Urtasun, and Sanja Fidler. 2015. Rent3D: Floor-Plan Priors for Monocular Layout Estimation. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*. IEEE Computer Society, Boston, Massachusetts, pages 3413-3421. **(Oral)**

Jingwen Bai, **Chenxi Liu**, and Ashutosh Sabharwal. 2014. Increasing Cellular Capacity Using ISM Band Side-channels: A First Study. In *Proceedings of the 4th workshop on All things cellular: operations, applications, & challenges*. ACM, Chicago, Illinois, pages 9-14.

AWARDS	Outstanding Reviewer, CVPR	2021
	MINDS Doctoral Dissertation Award	2020
	Outstanding Reviewer, ECCV	2020
	2019 Google PhD Fellowship	2019

Finalist, 2019 Adobe Research Fellowship	2018
Finalist, 2018 NVIDIA Graduate Fellowship	2018
Honorable Mention, 2017 Snap Research Fellowship	2017
Finalist, 2018 Adobe Research Fellowship	2017
Beijing Outstanding Graduate	2015
Tsinghua University Excellent Graduate	2015
National Southwest Associated University Scholarship, Tsinghua University	2014
Meritorious Winner, Mathematical Contest in Modeling, COMAP	2014
Geru Zheng Scholarship, 1st class, Tsinghua University	2013
National Scholarship, Tsinghua University	2013
3rd Prize, Beijing Universities Physics Competition	2012
EMC Scholarship, Tsinghua University	2012
Freshman Scholarship, 2nd class, Tsinghua University	2011

INVITED TALKS	On the Automation and Diagnosis of Visual Intelligence	
	– MINDS Symposium, Johns Hopkins University	October 2020
	Neural Architecture Search: Acceleration and Generalization	
	– Facebook	January 2020
	– ByteDance	February 2020
	– Amazon	February 2020
	– Waymo	February 2020
	– Facebook	March 2020
	Progressive Neural Architecture Search	
	– Google Research Conference	October 2018
	– Johns Hopkins University	October 2018
	– Leiphone Webinar	September 2018
	– European Conference on Computer Vision	September 2018
	– Stanford University (Host: Fei-Fei Li, Amir Zamir)	July 2018
	– Tsinghua University (Host: Jiwen Lu)	April 2018
	– Valse Webinar (Host: Wei Shen)	December 2017
	Rent3D: Floor-Plan Priors for Monocular Layout Estimation	
	– IEEE Conference on Computer Vision and Pattern Recognition	June 2015

PATENTS	Wei Hua, Barret Zoph, Jonathon Shlens, <b>Chenxi Liu</b> , Jonathan Huang, Jia Li, Fei-Fei Li, Kevin Murphy. Neural architecture search using a performance prediction neural network. <i>US Patent 16861491</i> .	
	Xin Lu, Zhe Lin, Xiaohui Shen, Jimei Yang, Jianming Zhang, Jen-Chan Jeff Chien, <b>Chenxi Liu</b> . Deep salient content neural networks for efficient digital object segmentation. <i>US Patent 10460214</i> .	
	Zhe Lin, Xin Lu, Xiaohui Shen, Jimei Yang, <b>Chenxi Liu</b> . Automatically segmenting images based on natural language phrases. <i>US Patent 10089742</i> .	
	<b>Chenxi Liu</b> , Tianlin Shi, Xinyi Yang. Method for identifying and correcting piano rhythms by using intelligent robot. <i>CN Patent 101930680</i> .	

SERVICE	Co-organizer of LVVU@CVPR 2020.	
	Invited reviewer for NIPS 2016, CVPR 2019, JMLR, NAACL 2019, PAMI, ICCV 2019, Neurocomputing, ACL 2019, EMNLP 2019, TMM, AAAI 2020, CVPR 2020, ACL 2020, ECCV 2020, NAS@ICLR 2020, EMNLP 2020, AACL-IJCNLP 2020, AutoML@ICML 2020, BMVC 2020, IJCV, CVPR 2021, ICCV 2021, ICLR 2022.	
	Reviewer for CVPR 2017, ICIP 2017, ICCV 2017, NIPS 2017, AAAI 2018, PRCV 2018, Pattern Recognition, AAAI 2019, ICML 2019.	
ADVISING	Xiaohui Zeng (HKUST) Yu-Siang Wang (NTU) Runtao Liu (PKU) Michelle Shu (JHU) Jiteng Mu (JHU)	Now MSc student at U of T (Raquel Urtasun, Sanja Fidler) Now MScAC student at U of T Now Ph.D. student at UC Berkeley (Stella Yu) Now Ph.D. student at Cornell University (Ramin Zabih) Now Ph.D. student at UC San Diego (Xiaolong Wang)
MISCELLANEOUS	Programming Languages Deep Learning Tools TOEFL GRE	Python, Matlab, C++, C, L <sup>A</sup> T <sub>E</sub> X PyTorch, Tensorflow, Caffe, Theano 117 (Reading 29, Listening 30, Speaking 29, Writing 29) 335 (Verbal 160, Quantitative 170, Writing 5.0)
REFERENCES	Alan Yuille ( <a href="mailto:alan.1.yuille@gmail.com">alan.1.yuille@gmail.com</a> ), Professor, Johns Hopkins University Kevin Murphy ( <a href="mailto:kpmurphy@google.com">kpmurphy@google.com</a> ), Research Scientist, Google AI Fei-Fei Li ( <a href="mailto:feifeili@cs.stanford.edu">feifeili@cs.stanford.edu</a> ), Professor, Stanford University	