

Yunhao Ge

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Education

University of Southern California

PHD, ilab, Computer Science Department

- Annenberg Graduate Fellowship at University of Southern California
- Advisor: Prof. Laurent Itti

Los Angeles, USA

Aug. 2019 - Present

Shanghai Jiao Tong University

MASTER OF SCIENCE, Robotics and Intelligence Group, Robotics Institute

- Overall **Ranking 6th/210**
- Advisor: Prof. Weixin Yan & Huanhua Liao & Prof. Yanzheng zhao
- Honor: Outstanding Graduate Thesis Award

Shanghai, China

Sep. 2016 - June 2019

Shandong University

BACHELOR OF ENGINEERING, Control Engineering and Mechatronics

- Overall **Ranking 1st/66**
- Honor: Outstanding Undergraduate Thesis Award

Jinan, China

Sep. 2012 - June 2016

Research Interests

I'm interested in Machine Learning, Computer vision, and their applications towards Artificial General Intelligence (AGI). My current research focuses include:

- 1) interpretable human-AI interaction (interpretability, steerability, disentangled representation learning)
- 2) generative models (data augmentation, how generative models boost discriminative models)
- 3) graph neural networks (structure and relationship learning)
- 4) visual reasoning, attention and saliency (cognitive learning, eye tracking)

Selected Publications

[1] A Peek Into the Reasoning of Neural Networks: Interpreting with Structural Visual Concepts

Yunhao Ge, Yao Xiao, Zhi Xu, Meng Zheng, Srikrishna Karanam, Terrence Chen, Laurent Itti and Ziyang Wu

[PDF](#) [Github](#) [Website](#)

IEEE/ CVF International Conference on Computer Vision and Pattern Recognition (CVPR), 2021.

[2] Zero-shot Synthesis with Group-Supervised Learning

Yunhao Ge, Sami Abu-El-Haija, Gan Xin and Laurent Itti [PDF](#) [Code](#) [Fonts Dataset](#) [Website](#)

International Conference on Learning Representations (ICLR), 2021.

[3] Graph Autoencoder for Graph Compression and Representation Learning

Yunhao Ge*, Yunkui Pang*, Linwei Li, Laurent Itti (* = equal contribution) [PDF](#) [Code](#) [Img2SceneGraph](#)

Neural Compression: From Information Theory to Applications-Workshop@ (ICLR), 2021.

[4] Pose Augmentation: Class-agnostic Object Pose Transformation for Object Recognition

Yunhao Ge, Jiaping Zhao, Laurent Itti [PDF](#) [Code](#)

European Conference on Computer Vision (ECCV), 2020.

[5] Beneficial Perturbation Network for designing general adaptive artificial intelligence systems

Shixian Wen, Amanda Rios*, Yunhao Ge* and Laurent Itti (* = equal contribution) [PDF](#)

IEEE Transactions on Neural Networks and Learning Systems (TNNLS), Jan 2021.

[6] Unpaired MR to CT Synthesis with Explicit Structural Constrained Adversarial Learning

Yunhao Ge*, Dongming Wei*, Zhong Xue, Qian Wang, Xiang Zhou, Yiqiang Zhan, Shu Liao (* = equal contribution) [PDF](#) [Code](#)

IEEE International Symposium on Biomedical Imaging (ISBI), 2019.

[7] Synthesis and inpainting-based MR-CT registration for image-guided thermal ablation of liver tumors

Dongming Wei, Sahar Ahmad, Jiayu Huo, Wen Peng, **Yunhao Ge**, Zhong Xue, Pew-Thian Yap, Wentao Li, Dinggang Shen, Qian Wang [PDF](#)

International Conference on Medical Image Computing and Computer-Assisted Intervention (**MICCAI**), 2019.

[8] Unpaired Whole-body MR to CT Synthesis with Correlation Coefficient Constrained Adversarial Learning

Yunhao Ge, Zhong Xue, Tuoyu Cao, Shu Liao [PDF](#) [Code](#)

SPIE-Medical Imaging, 2019 [oral]

[9] A Real-time Gesture Prediction System Using Neural Networks and Multimodal Fusion based on Data Glove

Yunhao Ge, Bin Li, Weixin Yan, Yanzheng Zhao [PDF](#) [Paper Link](#)

IEEE International Conference on Advanced Computational Intelligence (**ICACI**), 2018. [oral]

[10] HH-Net: Image driven microscope fast auto-focus with deep neural network

Yunhao Ge, Bin Li, Yanzheng Zhao, Weixin Yan [PDF](#)

International Conference on Biomedical Engineering and Technology (**ICBET**), 2019. [oral]

[11] Melanoma Segmentation and Classification in Clinical Images Using Deep Learning

Yunhao Ge, Bin Li, Weixin Yan [PDF](#) [Paper Link](#)

ACM International Conference on Machine Learning and Computing (**ICMLC**), 2018. [oral]

[12] Benign and Malignant Mammographic Image Classification Based on Convolutional Neural Networks

Bin Li, **Yunhao Ge**, Yanzheng Zhao, Enguang Guan, Weixin Yan [PDF](#) [Paper Link](#)

ACM International Conference on Machine Learning and Computing (**ICMLC**), 2018. [oral]

[13] Effect of Mechanical Error on Dual-Wedge Laser Scanning System and Error Correction

Yunhao Ge, Jihao Liu, Fenfen Xue, Enguang Guan, Weixin Yan, Yanzheng Zhao [PDF](#) [Paper Link](#)

Applied Optics (**Appl. Opt.** **IF:1.79**) 57, pp. 6047-6054, 2018

Research Experience

Microsoft Research

Research Intern

- Research topic: Automatic synthesis to boost discriminative models
- Advisor: [Vibhav Vineet](#), [Neel Joshi](#)

Redmond, WA, USA

May 2021 - Aug. 2021

UII America, Inc

Research Intern

- Research topic: General Visual Reasoning Framework
- Advisor: [Ziyan Wu](#), [Srikrishna Karanam](#)

Boston, MA, USC

May 2020 - Aug. 2020

Flexiv Robotics

Computer Vision Research Engineer

- Research topic: Robotics adaptive massage based on human pose detection and tracking with a lightweight local human 3D pose detection framework
- Advisor: [Cewu Lu](#), Shuyun Chong

Shanghai, China

May 2019 - Aug. 2019

United Imaging Intelligence

Research Intern

- Research topic: Unpaired Image Synthesis with Adversarial Learning
- Advisor: [Dinggang Shen](#), Shu Liao

Shanghai, China

June 2018 - Apr. 2019

Robotics Institute @ Shanghai Jiao Tong University

Research Assistant

- Research topic: (1) Robotics: Achieved automatic target localization, customization of scanning path, automatic focusing, defocus image restoration, automatic stitching of global imaging and other automated processing in the process of full slice scanning diagnosis of microscopy
- Research topic: (2) MAI: Automatic Detection and Segmentation of Colorectal Tumor in Medical Imag
- Research topic: (3) Robotics: Real-time Gesture Prediction on Medical Robotics
- Research topic: (4) Robotics: Effect of Mechanical Error on Dual-Wedge Laser Scanning System and Error Correction
- Advisor: [Weixin Yan](#), Huanhua Liao, and [Yanzheng Zhao](#)

Shanghai, China

Sep. 2016 - Apr. 2019

Honors & Awards

SCHOLARSHIPS

National Scholarship (Graduate) , top graduate nationwide	Nov. 2017
National Scholarship (UnderGraduate) , top undergraduate nationwide	Nov. 2015
KaiYuan Motivational Scholarship , top 0.5% in Shanghai Jiao Tong University	Apr. 2018
Presidential Scholarship , top 0.2% in Shandong University	Nov. 2015
BaoGang Excellent student Scholarship , 4 Places per year at Shandong University	Nov. 2015
First Prize Scholarship , three-year continuous	2013-2015

CONTESTS

The first prize , 2017 ROBOMASTER The World's Leading Robotics Competition (Responsible for the design of electronic control in robotics)	Aug. 2017
Rank 1st (preliminary competition) , Tianchi: Precision medical competition-Artificial Intelligence Aided genetic risk prediction of diabetes OPred-diabetes	Dec. 2017
The first prize , 9th International college students Ican innovation and entrepreneurship competition	Oct. 2015

Patent & software

Systems and methods for image processing Shu Liao, GE Yunhao , WEI Dongming US Patent App. 16/729,303.	US Patent July 2020
Pulmonary Nodular Assisted Detection System Based on AI(V1.0) Bin Li, Yunhao Ge 2018SR037095	Software Jan. 2018
A two-layer barrier free parking robotics based on bionic manipulator Yunhao Ge , Shangze Yang, Zheng Zhang, Weixin Yan, Yanzheng Zhao CN201610712048	Patent for invention Jan. 2017