

Yunhao(Andy) Ge

☎ (+1) 2136759836 | ✉ yunhaoge@usc.edu | 🏠 gyhandy.github.io | 📺 [gyhandy](#)

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 more Human-centric and Humanoid AI. My current research focuses include:

- 1) **Human-centric properties of AI models:** (Causal Explainable AI, Human-to-AI / AI-to-AI Knowledge Exchange, Domain Adaptation, Out-of-distribution Detection (OOD))
- 2) **Simulate human cognitive learning ability:** (Continual Learning, Imagination, Reasoning, Visual Recognition)
- 3) **How generative models (NeRF, GAN, VAE) and multi-modal models** (DALL-E, CLIP) help downstream discriminative models (detection, segmentation)

Selected Publications

[1] Neural-Sim: Learning to Generate Training Data with NeRF

Yunhao Ge, Harkirat Behl*, Jiashu Xu*, Suriya Gunasekar, Neel Joshi, Yale Song, Xin Wang, Laurent Itti, Vibhav Vineet (*=equal contribution)

[PDF](#) [Code](#)

European Conference on Computer Vision (ECCV), 2022.

[2] Contributions of Shape, Texture, and Color in Visual Recognition

Yunhao Ge*, Yao Xiao*, Zhi Xu, Xingrui Wang, Laurent Itti (*=equal contribution)

[PDF](#) [Code](#)

European Conference on Computer Vision (ECCV), 2022.

[3] 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.

[4] 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.

[5] Encouraging Disentangled and Convex Representation with Controllable Interpolation Regularization

Yunhao Ge, Zhi Xu, Yao Xiao, Gan Xin, Yunkui Pang and Laurent Itti [PDF](#)

arXiv, 2021.

[6] 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.

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

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

European Conference on Computer Vision (ECCV), 2020.

[8] 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.

[9] 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.

[10] 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.

[11] 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]

Intern & Work Experience

Google Research

Research Intern

- Research topic: Vision-Language multimodal for OOD
- Advisor: [Jiaping Zhao](#), [Jie Ren](#), [Balaji Lakshminarayanan](#)

Los Angeles, CA, USA

May. 2022 - Aug. 2022

Google Cloud AI

Research Intern

- Research topic: Explainable Concept learning in structural data
- Advisor: [Sercan Arik](#), [Jinsung Yoon](#)

Mountain View, CA, USA

Aug. 2021 - Jan. 2022

Microsoft Research

Research Intern

- Research topic: Automatic using generative models 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: A Peek Into the Reasoning of Neural Networks: Interpreting with Structural Visual Concepts
- 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

Honors & Awards

SCHOLARSHIPS

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|---|-------------------|
| Annenberg Project Grant for simulating human imagination , awarded annually to 10 PhD students across USC for high-impact projects | <i>April 2022</i> |
| Annenberg Fellowship (PhD) , University of Southern California | <i>Aug. 2019</i> |
| National Scholarship (Graduate) , top graduate nationwide | <i>Nov. 2017</i> |
| National Scholarship (Undergraduate) , top undergraduate nationwide | <i>Nov. 2015</i> |
| KaiYuan Motivational Scholarship , top 0.5% in Shanghai Jiao Tong University | <i>Apr. 2018</i> |
| Presidential Scholarship , top 0.2% in Shandong University | <i>Nov. 2015</i> |
| BaoGang Excellent student Scholarship , 4 Places per year at Shandong University | <i>Nov. 2015</i> |
| First Prize Scholarship , three-year continuous | <i>2013-2015</i> |

CONTESTS

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

Patent & software

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