

Yikang LI

PRAGMATIC OPTIMIST · AGI ADVOCATE · AI PRACTITIONER

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“Make the change that you want to see in the world.”

Education

Department of Electronic Engineering, The Chinese University of Hong Kong

Hong Kong SAR

PH.D. IN COMPUTER VISION AND MACHINE LEARNING

Aug. 2016 - May. 2020

- Supervised by Prof. Xiaogang WANG and Prof. Xiaoou TANG.
- Awardee of Hong Kong PhD Fellowship Scheme(HKPFS) and Microsoft Research Asia (MSRA) PhD Fellowship.

Department of Electronic Engineering, Tsinghua University

Beijing, China

B.S. IN ELECTRONIC ENGINEERING & ECONOMICS (2nd major)

Aug. 2011 - July. 2016

- GPA: 92/100. Ranking: 1/18 or 8/181. National Scholarship awardee and Class monitor.
- The 2nd Major equipped me with economic thinking and the fundamental knowledge about finance, business and economics.

Telecommunications, University of New South Wales

Sydney, Australia

EXCHANGE STUDENT

July. 2013 - Nov. 2013

- National exchange scholarship awardee. Funded by State Scholarship Council(CSC).
- Supervised by Prof. Jayantha Katupitiya on the 4WD4WS Quadbike Project.

Working Experience

Shanghai Innovation Institute

Shanghai, China

ASSOCIATE PROFESSOR (TENURE-TRACK)

July. 2024 - Now

- Collective intelligence: scalable human-in-the-loop data annotation methods to enhance AI capabilities;
- Developing AI-powered global event perception and forecasting systems;
- Contributing to the design of the institute's value-oriented project management framework.

FFT Investment Limited

Shanghai, China

RESEARCHER | CHIEF OPERATING OFFICER | PARTNER

June. 2024 - Now

- Led AI and Data teams to improve global asset valuation using advanced ML models and diverse data sources;
- Developed AI predictive systems to increase valuation accuracy across major markets;
- Shaped company strategy and organizational design for scalable, sustainable growth.

VC Investment, IDG Capital

Hong Kong SAR

VICE PRESIDENT IN AI | AI INDUSTRY OBSERVER

Aug. 2022 - May. 2024

- Cover the area of Large Language Model (LLM), Generative AI (GAI) and Embodied AI / Robotics.
- Led the investment in Galaxea AI (星海图), one of China's leading Embodied AI companies;
- Project member of Step AI (阶跃星辰), Sandi AI (三代科技), MiniMax, Light Year AI (光年之外) etc.

Autonomous Driving Group, Shanghai AI Laboratory

Shanghai, China

RESEARCH SCIENTIST | PI

Apr. 2021 - Jul. 2023

- Principle Investigator of Autonomous Driving Research, leading 20+ full-time researchers.
- We focus on designing a data-driven simulation framework that can reflect the real-world performance of autonomous driving.
- Our auto-labeling system ranks 1st on Waymo 3D Detection Benchmark, surpassing the 2nd by a large margin.
- Research interest covers 3D Scene Reconstruction, 3D Scene Perception, Behavior & Scene Simulation, etc.
- From Aug. 2022, I started serving as the consultant and research committee member to support the team.

Autonomous Driving Group, SenseTime Group Ltd.

Hong Kong & Shanghai, China

DEPUTY DIRECTOR OF R&D | L4 PRODUCT LEAD

Feb. 2019 - Jul. 2022

- Reporting to Jianping Shi, executive director of Autonomous Driving Group.
- Leading the Level-4 Autonomous Driving Product Team (25+ members).
- In charge of the projects like C-V2X autonomous minibus development, L4 license testing, the reference system development, etc.
- Leading the testing department of the Autonomous Driving and ADAS Projects.
- Designing the multi-sensor platform including calibrations, time synchronization, sensor fusion algorithm research, etc.

Natural Language Computing, Microsoft Research Asia (MSRA)

Beijing, China

RESEARCH INTERN

June. 2017 - Oct. 2017 & Oct. 2018 - Jan. 2019

- Supervised by Nan Duan and Ming Zhou, in the area of Language and Vision.
- We explore the possibility to apply both NLP and CV techniques to do some interesting and promising works.
- One CVPR paper on Visual Question Answering and one NeurIPS paper on Text-to-Image Synthesis are published.

Nimble VR, Facebook Reality Labs (FRL)

Sausalito CA, USA

RESEARCH INTERN

May. 2018 - Sep. 2018

- Mentored by Chris Twigg, Yuting YE and Lingling TAO.
- We focus on generating hand images with various pose-appearance combinations by disentangling the pose from miscellaneous factors and re-combining them. We can use N images to synthesize N(N-1) images to enhance the model training.

Visual Computing Group, Microsoft Research Asia (MSRA)

Beijing, China

RESEARCH INTERN

Jul. 2014 - May. 2015

- Supervised by Lead Researcher, Lu Yuan, in the area of Computational Photography on the following two projects.
- *HDR automatic detection*: to help mobile phones detect whether the current scene is the HDR-scene using light-weight classifier.
- *Intelligent Burst HDR Capture*: to recover HDR images using burst-captured images with predicted exposure settings.

Selected Projects

Multi-task Perception with Multi-modal Input

Shanghai AI Lab

CORE TEAM: BOTIAN SHI, TAO MA, YUENAN HOU, XUEMENG YANG, HONGBIN ZHOU, XIN LI, ETC.

Mar. 2021 - Aug. 2023

- Multi-model fusion, temporal fusion, and multi-dataset fusion are investigated to enhance the 3D perception performance.
- Our DetZero achieves on-par-with-human performance and ranks 1st in Waymo 3D Detection Leaderboard (Since 2023.3).
- 10 top-tier conference papers are published in the related areas, including CVPR, ICCV, AAAI, etc.

Smart Sensor Sets for Autonomous Driving

Shanghai AI Lab & SenseTime Group

CORE TEAM: GUOHANG YAN, XINYU CAI, TAO MA, ZHIZHENG LIU, ETC.

May 2020 - Jul. 2023

- Automatically designing the optimal sensor set and precisely finishing the sensors calibration is our target.
- More than 5 top-tier papers are published to investigate how to set up a robust sensor set.
- We open-source the most complete AD calibration tool for AD, OpenCalib, gaining more than 1.5k stars.

Smart Agent with human-like behaviors for Simulation

Shanghai AI Lab

CORE TEAM: PINLONG CAI, SONG MAO, LICHENG WEN, DAOCHENG FU, XING GAO, ETC.

Jun. 2021 - Jun. 2023

- Data-driven autonomous driving (AD) requires diverse and numerous dynamic scenarios for verification and validation.
- We investigate how to model multi-agent behavior via learning-based and rule-based methods.
- 5 top-tier papers are published and a light-weighted traffic simulator, *LimSim*, is open-sourced for the community.

3D Scene Reconstruction and Generation

Shanghai AI Lab

CORE TEAM: JIANFEI GUO, XINYANG LI, QIUSHENG HUANG, NIANCHEN DENG, ETC.

May 2021 - Jun. 2023

- Data-driven autonomous driving (AD) requires numerous raw sensor data with annotations. Synthesizing data provides accurate labeling but lacks realism. Neural Rendering (like NeRF) provides a promising way to solve this problem.
- We set up a pure research team aiming at solving the core challenges in the application of the NeRF-related approaches.
- We present a novel multi-view implicit surface reconstruction technique, termed StreetSurf, supporting camera and LiDAR input.

Senseauto Robobus - L4 Autonomous Driving Product

SenseTime Group

CORE TEAM: SENSEAUTO L4 PRODUCT TEAM

Jul. 2020 - Dec. 2022

- We design SenseTime's first L4 product from scratch, from the initial selection of the vehicle body and sensors to fine-tuning system performance, all the way through to final customer delivery.
- Our robobus passed the Shanghai & Beijing ICV Road Testing and obtained the open road testing certificates.
- More than 5 buses were delivered to final customers and put into operations, generating more than 10M Yuan revenue.

Senseauto Verification and Validation Platform

SenseTime Group

CORE TEAM: SENSEAUTO L4 V&V TEAM

Jan. 2019 - Dec. 2022

- We built the full verification and validation system for SenseTime's Autonomous Driving Project from scratch.
- Our V&V system contains full SIL/HIL/VIL testing procedure and a 50-vehicle testing fleet, operating more than 500k km.
- Our designed Automated Data Operating system can efficiently collect, manage and utilize field-testing data.

Honors & Awards

2021	Outstanding Group for L4 RoboBus Product Team , SenseTime Group	Shanghai, China
2020	Outstanding Employee , SenseTime Group	Shanghai, China
2019	Overseas High-Caliber Personnel , C-class	Shenzhen, China
2019	CVPR 2019 Doctoral Consortium , 40 Ph.D. Candidates world-wide	Long Beach, USA
2018	Microsoft Research PhD Fellowship , 11 awardees in Asia-Pacific Area.	Beijing, China
2018	Outstanding Student Award (Team Award) , The Chinese University of Hong Kong	Hong Kong, China
2016	Hong Kong PhD Fellowship , about 230 awardees per year in Hong Kong	Hong Kong, China
2016	Outstanding Final-Year Project , Top 10% student in EE Department	Beijing, China
2013/14/15	ST Engineering Scholarship , Top 5% student in EE Department	Singapore
2014	National Scholarship , Top 1% student in EE Department	Beijing, China
2013	Exchange Student Scholarship , National Excellent Undergraduate Exchange Scheme	Sydney, Australia
2012	Special Award , Tsinghua University 7th Automobile Design Competition	Beijing, China

Selected Activities

2017 - now	Conference PC Member , ICML, ICLR, CVPR, AAAI, NeurIPS, ICML, ICCV, ECCV, IJCAI, etc.	World-wide
2018 - now	Journal Reviewer , TPAMI, IJCV, TIP, R-AL, etc.	World-wide
2021 - 2023	Committee Member , Shanghai Intelligent & Connected Vehicle Standardization Committee	Shanghai, China
2021	Editorial Board Member , White Paper for Technique Innovations in Autonomous Industry (2021)	Shanghai, China
2021	Group Standard Editor , General Technique Requirements for Autonomous Minibus	Shaanxi, China
2020	Review Panelist , Shanghai 's Intelligent & Connected Vehicle Specialist Committee	Shanghai, China
2019	Review Panelist , Wuhan 's Intelligent & Connected Vehicle Specialist Committee	Wuhan, China
2016-2018	Associate Vice President , CUHK Chinese Students and Scholars Association (CSSA)	Hong Kong SAR
2016-2018	Vice President , CUHK Postgraduate Hall Residents' Association (PGHRA)	Hong Kong SAR
2013-2014	Activity Department Minister , Business Association of Tsinghua Entrepreneurial Students	Beijing, China

Paper List

General Vision and Language Research

- **PasteGAN: A Semi-Parametric Method to Generate Image from Scene Graph**, Yikang LI, Tao Ma, Yeqi Bai, Nan Duan, Sining Wei, Xiaogang Wang, *NeurIPS 2019*
- **Disentangling Pose from Appearance in Monochrome Hand Images**, Yikang LI, Chirs Twigg, Yuting Ye, Lingling Tao, Xiaogang Wang, *ICCV-W 2019*
- **Perceive Where to Focus: Learning Visibility-aware Part-level Features for Re-ID**, Yifan Sun, Yali Li, Qin Xu, Chi Zhang, Yikang LI, Shengjin Wang, Jian Sun, *CVPR 2019*
- **Factorizable Net: An Efficient Framework for Scene Graph Generation**, Yikang LI, Wanli Ouyang, Bolei Zhou, Jianping Shi, Chao Zhang, Xiaogang Wang, *ECCV 2018*
- **Question-Guided Hybrid Convolution for Visual Question Answering**, Peng Gao, Hongsheng Li, Shuang Li, Pan Lu, Yikang LI, Steven C.H. Hoi, Xiaogang Wang, *ECCV 2018*
- **Visual Question Generation as Dual Task of Visual Question Answering**, Yikang LI, Nan Duan, Bolei Zhou, Xiao Chu, Wanli Ouyang, Xiaogang Wang, Ming Zhou, *CVPR 2018 Spotlight*
- **Semantically Consistent Image Completion with Fine-grained Details**, Pengpeng Liu, Xiaojuan Qi, Pinjia He, Yikang LI, Michael R. Lyu, Irwin King, *arXiv preprint*
- **Scene Graph Generation from Objects, Phrases and Caption Regions**, Yikang LI, Wanli OUYANG, Xiaogang WANG, Bolei ZHOU, Kun WANG, *ICCV 2017*
- **ViP-CNN: Visual Phrase Guided Convolutional Neural Network**, Yikang LI, Wanli OUYANG, Xiaogang WANG, Xiaou TANG, *CVPR 2017*

Multi-task Perception with Multi-modal Input

- **DetZero: Rethinking Offboard 3D Object Detection with Long-term Sequential Point Clouds**, Tao Ma, Xueming Yang, Hongbin Zhou, Xin Li, Botian Shi, Junjie Liu, Yuchen Yang, Zhizheng Liu, Liang He, Yu Qiao, Yikang LI*, Hongsheng Li*, *ICCV 2023*
- **LoGoNet: Towards Accurate 3D Object Detection with Local-to-Global Cross-Modal Fusion**, Xin Li, Tao Ma, Yuenan Hou, Botian Shi, Yuchen Yang, Youquan Liu, Xingjiao Wu, Qin Chen, Yikang LI*, Yu Qiao, Liang He*, *ICCV 2023*
- **CLIP2Scene: Towards Label-efficient 3D Scene Understanding by CLIP**, Runnan Chen, Youquan Liu, Lingdong Kong, Xinge

Zhu, Yuexin Ma, **Yikang LI**, Yuenan Hou, Yu Qiao, Wenping Wang, *CVPR 2023*

- **RangePerception: Taming LiDAR Range View for Efficient and Accurate 3D Object Detection**, Yeqi Bai, Ben Fei, Youquan Liu, Tao MA, Yuenan Hou, Botian Shi, **Yikang LI**, *NeurIPS 2023*
- **SCPNet: Semantic Scene Completion on Point Cloud**, Zhaoyang Xia, Youquan Liu, Xin Li, Xinge Zhu, Yuexin Ma, **Yikang LI**, Yuenan Hou, Yu Qiao, *CVPR 2023*
- **LWSIS: LiDAR-guided Weakly Supervised Instance Segmentation for Autonomous Driving**, Xiang Li, Junbo Yin, Botian Shi, Yikang Li, Ruigang Yang, Jianbin Shen, *AAAI 2023*
- **Homogeneous multi-modal feature fusion and interaction for 3D object detection**, Xin Li, Botian Shi, Yuenan Hou, Xingjiao Wu, Tianlong Ma, **Yikang LI***, Liang He*, *ECCV 2022*
- **Comprehensive review of deep learning-based 3d point cloud completion processing and analysis**, Ben Fei, Weidong Yang, Wen-Ming Chen, Zhijun Li, **Yikang LI**, Tao Ma, Xing Hu, Lipeng Ma, *T-ITS*
- **Multi-modal sensor fusion for auto driving perception: A survey**, Keli Huang, Botian Shi, Xiang Li, Xin Li, Siyuan Huang, **Yikang LI***, *Arxiv Preprint*
- **Point-to-Voxel Knowledge Distillation for LiDAR Semantic Segmentation**, Yuenan Hou, Xinge Zhu, Yuexin Ma, Chen Change Loy, **Yikang LI***, *CVPR 2022*

Smart Agent with Human-like Behaviors for Simulation

- **Dynamic Scenario Representation Learning for Motion Forecasting With Heterogeneous Graph Convolutional Recurrent Networks**, Xing Gao, Xiaogang Jia, **Yikang LI**, Hongkai Xiong, *RA-L*
- **Bringing Diversity to Autonomous Vehicles: An Interpretable Multi-vehicle Decision-making and Planning Framework**, Licheng Wen, Pinlong Cai, Daocheng Fu, Song Mao, **Yikang LI***, *AAMAS 2023*
- **Hybrid cooperative intersection management for connected automated vehicles and pedestrians**, Pinlong Cai, Jia He, **Yikang LI***, *J-ICV*
- **LimSim: A Long-term Interactive Multi-scenario Traffic Simulator**, Licheng Wen, Daocheng Fu, Song Mao, Pinlong Cai, Min Dou, **Yikang LI***, *ITS-C 2023*
- **General Driving Behavior Model based on the Desired Safety Margin for Vehicle Flow Simulation**, Pinlong Cai, Junjie Zhang, Xuan Zhao, **Yikang LI***, *ITS-C 2022*

Smart Sensor Sets for Autonomous Driving

- **Optimizing the Placement of Roadside LiDARs for Autonomous Driving**, Wentao Jiang, Hao Xiang, Xinyu Cai, Runsheng Xu, Jiaqi Ma, **Yikang LI***, Gim Hee Lee, Si Liu*, *ECCV 2023*
- **Calib-Anything: Zero-training LiDAR-Camera Extrinsic Calibration Method Using Segment Anything**, Zhaotong Luo, Guohang Yan, **Yikang LI***, *Arxiv Preprint*
- **Automatic Surround Camera Calibration Method in Road Scene for Self-driving Car**, Jixiang Li, Jiahao Pi, Guohang Yan, **Yikang LI***, *Opensource Project*
- **Joint camera intrinsic and lidar-camera extrinsic calibration**, Guohang Yan, Feiyu He, Chunlei Shi, Pengjin Wei, Xinyu Cai, **Yikang LI***, *ICRA 2023*
- **Analyzing infrastructure lidar placement with realistic lidar library**, Xinyu Cai, Wentao Jiang, Runsheng Xu, Wenquan Zhao, Jiaqi Ma, Si Liu, **Yikang LI***, *ICRA 2023*
- **SensorX2car: Sensors-to-car calibration for autonomous driving in road scenarios**, Guohang Yan, Zhaotong Luo, Zhuochun Liu, **Yikang LI***, *Arxiv Preprint*
- **CROON: Automatic Multi-LiDAR Calibration and Refinement Method in Road Scene**, Pengjin Wei, Guohang Yan, **Yikang LI**, Kun Fang, Wei Liu, Xinyu Cai, Jie Yang, *IROS 2022*
- **CRLF: Automatic Calibration and Refinement based on Line Feature for LiDAR and Camera in Road Scenes**, Tao Ma, Zhizheng Liu, Guohang Yan, **Yikang LI***, *Arxiv Preprint*
- **OpenCalib: A Multi-sensor Calibration Toolbox for Autonomous Driving**, Guohang Yan, Liu Zhuochun, Chengjie Wang, Chunlei Shi, Pengjin Wei, Xinyu Cai, Tao Ma, Zhizheng Liu, Zebin Zhong, Yuqian Liu, Ming Zhao, Zheng Ma, **Yikang LI***, *Opensource Project*

3D Scene Reconstruction and Generation

- **StreetSurf: Extending Multi-view Implicit Surface Reconstruction to Street Views**, Jianfei Guo, Nianchen Deng, Xinyang Li, Yeqi Bai, Botian Shi, Chiyu Wang, Chenjing Ding, Dongliang Wang, **Yikang LI***, *Arxiv Preprint*
- **L-Tracing: Fast Light Visibility Estimation on Neural Surfaces by Sphere Tracing**, Ziyu Chen, Chenjing Ding, Jianfei Guo, Dongliang Wang, **Yikang LI**, Xuan Xiao, Wei Wu, Li Song, *ECCV 2022*

Perception Generalization across different Scenarios for Autonomous Driving

- **Uni3D: A unified baseline for multi-dataset 3d object detection**, Bo Zhang, Jiakang Yuan, Botian Shi, Tao Chen, **Yikang LI***, Yu Qiao, *CVPR 2023*
- **AD-PT: Autonomous Driving Pre-Training with Large-scale Point Cloud Dataset**, Jiakang Yuan, Bo Zhang, Xiangchao Yan, Tao Chen, Botian Shi, **Yikang LI**, Yu Qiao, *NeurIPS 2023*
- **Bi3D: Bi-domain Active Learning for Cross-domain 3D Object Detection**, Jiakang Yuan, Bo Zhang, Xiangchao Yan, Tao Chen, Botian Shi, **Yikang LI**, Yu Qiao, *CVPR 2023*
- **β -DARTS: Beta-Decay Regularization for Differentiable Architecture Search**, Peng Ye, Baopu Li, **Yikang LI**, Tao Chen, Jiayuan Fan, Wanli Ouyang, *CVPR 2022 (Oral)*