Jinming Su (苏金明)

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About

I currently work as an algorithm engineer at **Meituan**. I am broadly interested in solving real-world visual understanding problems with optimization/learning-based algorithms. Recently, I focus on **AIGC, NeRF and autonomous driving**.
I obtained my Master's Degree (CS) in State Key Laboratory of Virtual Reality Technology and Systems, SCSE, Beihang University, adviced by Prof. Jia Li, in Jan. 2020. From 2018 to 2019, I worked as a research assistant at Peng Cheng Laboratory (PCL) with Dr. Changqun Xia.

Experience

Meituan, Beijing, China — Feb. 2020 – Present

Algorithm Engineer (L7) 2022 – Present

Algorithm Engineer (L6) 2020 – 2022

Focusing on road scene understanding for map building, neural radiation field (NeRF) and generation (AIGC) for outdoor scenes.

Projects

Outdoor NeRF and AIGC — Sept. 2022 – Present

Goal: diversity labeled data synthesis and scene simulation

- developed a NeRF system for drone scenes with PSNR 23+, which optimizes the semantic segmentation label and improves the performance of the downstream segmentation model (2+% mIoU)
- developed a NeRF system for street scenes with PSNR 24+ (6 cameras), achieving the state-of-the-art performance
- developing a large AI model for 2D/3D street scenes, to generate corner cases for map building and perception

Road scene understanding — Sept. 2020 – Dec. 2022

Goal: improve the automation rate of HD/ADAS/SD map building

- developed a robust and efficient visual perception system, which is featured by:
- with 4 modules, 20+ micro-services
- semantic extraction: semantic segmentation with 70+ classes, including perspective/panoramic views, all elements of maps, high precision/high speed inference and deployment
- instance extraction: instance segmentation, lane detection (accepted by IJCAI 2021), video object tracking
- feature extraction: semantic keypoint extraction and matching, feature descriptor extraction and matching
- monocular 3D vision: monocular depth estimation and visual 3D reconstruction, including perspective/panoramic views
- Result: applied to the production of HD map, ADAS map in Beijing, HD map almost the whole country
- Extra: developed an intelligent segmentation annotation system, and published two papers on instance segmentation, and video semantic segmentation in CVPRW 2023

Image quality assessment — Feb. 2020 – Aug. 2020

Goal: filter invalid images to improve the success rate of the map building

- developed a robust image quality assessment system
- judgment and filtering 10+ kinds of invalid images, e.g. Overexposure, night and traffic jam
- Result: check all images (billions of images every year) used to produce HD map with100% automation rate of image audit

Educations

Beihang University (BUAA), Beijing, China — Sept. 2017 – Jan. 2020

M.Sc. in Computer Science and Technology, ranked 9/303, top 3.0%
– State Key Laboratory of Virtual Reality Technology and Systems, SCSE
– Advisor: Prof. Jia Li

Northeastern University (NEU), Shenyang, China — Sept. 2013 – Jul. 2017

B.Eng. in Computer Science and Technology, ranked 10/258, top 3.9%
– Recommended for admission to Beihang University without exams

Selected Publications

- **Jinming Su***, Ruihong Yin*, Shuaibin Zhang and Junfeng Luo. Motion-state Alignment for Video Semantic Segmentation. *IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), 2023.*
- **Jinming Su**, Ruihong Yin, Xingyue Chen and Junfeng Luo. Perceive, Excavate and Purify: A Novel Object Mining Framework for Instance Segmentation. *IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), 2023.*
- Jia Li, **Jinming Su**, Changqun Xia, Yonghong Tian. Salient Object Detection with Purificatory Mechanism and Structural Similarity Loss. *IEEE Transactions on Image Processing (T-IP), 30, pp.6855-6868, 2021.*
- **Jinming Su**, Chao Chen, Ke Zhang, Junfeng Luo, Xiaoming Wei and Xiaolin Wei. Structure Guided Lane Detection. *International Joint Conference on Artificial Intelligence (IJCAI), 2021.*
- **Jinming Su**, Changqun Xia and Jia Li. Exploring Driving-aware Salient Object Detection via Knowledge Transfer. *IEEE International Conference on Multimedia and Expo (ICME), 2021. (oral)*
- Jia Li, **Jinming Su**, Changqun Xia, Yonghong Tian. Distortion-adaptive Salient Object Detection in 360° Omnidirectional Images. *IEEE Journal of Selected Topics in Signal Processing (J-STSP), 14(1), pp.38-48, 2020.*
- **Jinming Su**, Jia Li, Yu Zhang, Changqun Xia and Yonghong Tian. Selectivity or Invariance: Boundary-aware Salient Object Detection. *IEEE International Conference on Computer Vision (ICCV), 2019.*
- Junwei Yang, Ke Zhang, Zhaolin Cui, **Jinming Su**, Junfeng Luo and Xiaolin Wei. InsCon:Instance Consistency Feature Representation via Self-Supervised Learning. *arXiv preprint arXiv:2203.07688, 2022.*
- Changqun Xia, Jia Li, **Jinming Su** and Yonghong Tian. Relating Background to Foreground: Exploring Reciprocal Attention for Salient Object Detection by Cooperative Learning. *arXiv preprint arXiv:1909.08269, 2019.*
- Changqun Xia, Jia Li, **Jinming Su** and Ali Borji. Learning a saliency evaluation metric using crowdsourced perceptual judgments. *arXiv preprint arXiv:1806.10257, 2018.*
- Patents: 10 items are in applications and 6 items are issued.

Skills

- Specialize in deep learning for computer vision, including NeRF, visual 3D reconstruction, road scene understanding, visual saliency, and so on.
- good at academic writing and presentation, CET6
- Familiar with deep learning libraries Pytorch/Caffe

Services & Activities

- Journal reviewer of T-PAMI, T-CSVT, T-IV
- Conference reviewer of CVPR, ICCV, ECCV
- Teaching assistant for *Machine Learning and Its Engineering Foundation* at BUAA, Spring 2018
- Designed and developed the official website of CVTEAM laboratory http://cvteam.net
- Participated in the design and development of program online judge platform for NEU https://oj.neu.edu.cn

- Member of the ACM-ICPC team of NEU
- Homepage: http://jinmingsu.net

Competitions

- 1st place of Panoptic Segmentation in the ACDC Workshop, in CVPR 2023
- 1st place of Semantic Segmentation in the ACDC Workshop, in CVPR 2023
- 3rd place of Video Panoptic Segmentation in the 2nd PVUW Workshop, in CVPR 2023
- 6th place of Video Semantic Segmentation in the 2nd PVUW Workshop, in CVPR 2023
- 2nd place of BDD100K Multiple Object Tracking in the 2nd SSLAD Workshop, in ECCV 2022
- 1st place of Corner Case Detection in the 2nd SSLAD Workshop, in ECCV 2022
- 5th place of Video Object Segmentation in the 4th Youtube-VOS Workshop, in CVPR 2022
- 2nd prize of the National English Competition for College Students, 2015
- 1st prize of the Liaoning Province ACM-ICPC Contest, 2015
- 1st prize of the Liaoning Province ACM-ICPC Contest, 2014
- 2nd prize of the China Undergraduate Mathematical Contest in Modeling, 2014
- 3rd prize of the Northeast Region ACM-ICPC Contest, 2014

Selected Honours

- Star of Basic Research & Development Business Group (10 of 2000+), in Meituan, 2022
- Star of Intelligent Traffic Business Group (39 of 2000+), in Meituan, 2021
- Outstanding Master Graduate, in Beijing, 2020
- Outstanding Master Graduate Thesis, in BUAA, 2020
- National Scholarship, 2019
- Huawei Scholarship, 2019
- Outstanding Student of BUAA, 2019
- Merit Student of BUAA, 2018/2019
- First Class Scholarship of Excellent Student in BUAA, 2017-2019
- Outstanding Undergraduate Thesis, in NEU, 2017
- National Encouragement Scholarship, 2014-2016
- The Zhou Kun Scholarship, 2013-2016
- Excellent Student of NEU, 2014/2015
- Outstanding Individual of Scientific and Technological Innovation of NEU, 2014