Yuejiao Su

Contact Information

Address: 127 West Youyi Road, Xi'an, 710072, P.R.China
Phone: +86 18710885983
Email: yuggie0816@gmail.com
Homepage: https://yuggiesu.github.io/

Research Interests

I have broad interests in computer vision with a particular emphasis on multimodal pixel-level tasks such as RGB-D semantic segmentation and super-resolution. My past research investigated using multimodal information to learn discriminative and effective multimodal features to classify scenes at the pixel level. Another interest of mine is efficient representation learning, including self-supervised learning, contrastive learning, and metric learning. In the future, I hope to further explore and design algorithms for pixel-level tasks in computer vision, because I am passionate about this field, and there are still many unknown questions that need to be studied and answered.

Education

Sep. 2020 - present — M.E. Candidate in Computer Science and Technology, **GPA: 3.71/4.0**
Northwestern Polytechnical University, Xi'an, China
Faculty: School of Computer & School of Artificial Intelligence, OPtics and Electron-Nices (iOPEN)
Advisor: Prof. Yuan Yuan and Prof. Xuelong Li
National Scholarship (rank 6th out of 322 students)

Sep. 2016 - Jun. 2020 — B.E. in Computer Science and Technology, **GPA: 86.14/100.0**
Northwestern Polytechnical University, Xi'an, China
Thsis: The research of semantic segmentation based on RGB-D images
Postgraduate Recommendation (top-20%)

Publications

Jun. 2022 — **Resolution-Misaligned RGB-D Semantic Segmentation** — **In Pipeline**
(authors: **Yuejiao Su**, Yuan Yuan, Zhiyu Jiang) This paper presents a novel approach for semantic segmentation utilizing resolution-misaligned RGB-D images. First, the RGB-assisted depth super-resolution is introduced as auxiliary task to align the resolution, and then the super-resolution task is used as the supervision signal of the semantic segmentation task to transfer knowledge to help the semantic segmentation task learn effective representations. In addition, this paper deeply mines the potential matching characteristic of RGB-D image pairs, and designs a constraint to encourage the model to maintain this matching relationship. Extensive experiments show that the proposed method achieves state-of-the-art performance on NYU Depth V2 dataset.
Target journal: IEEE Transactions on Image Processing (T-IP)
My Contributions: Resolution-misaligned RGB-D semantic segmentation (main idea), all experiments and paper writing.

Mar. 2021 — **Deep Feature Selection-and-Fusion for RGB-D Semantic Segmentation** — **ICME 2021**
(authors: **Yuejiao Su**, Yuan Yuan, Zhiyu Jiang) Aiming at effectively fusing multimodal features in RGB-D semantic segmentation, this paper proposes a novel selection-and-fusion strategy. Specifically, this paper designs a cross-modality residual connection that explicitly selects complementary features from another modality while maintaining the specificity of the original modality, and then fuses the selected features with the original features to form discriminative features. Extensive experiments show that the proposed method achieves state-of-the-art performance on two public RGB-D semantic segmentation datasets.
IEEE International Conference on Multimedia and Expo 2021 [Paper]
My Contributions: Multi-modality fusion strategy (main idea), all experiments and paper writing.

Research Projects

May. 2022 — **Video Object Detection and Tracking** — **Student Leader**
(supervisor: Zhiyu Jiang) This project utilizes the feature pyramid to perform end-to-end object detection of different scales in the first frame, and uses the optical flow information of the video to assist the model to accurately track the objects detected. This project is still a work in progress.
My Contributions: Code writing, slides and document writing.

Dec. 2021 | **Object Detection based on Millimeter Wave** | **Student Leader**

(supervisors: Zhiyu Jiang) This project firstly detectes the object millimeter wave and background millimeter wave in different scenarios, and uses the simulation program to simulate the object millimeter wave and background millimeter wave. Then, a waveform detector based on the channel-wise attention mechanism is proposed to accurately detect the target millimeter wave. This project is still a work in progress.

My Contributions: Code writing, document writing (part) and sorting.

Nov. 2020 | **Remote Sensing Image Semantic Segmentation** | **Algorithm Designer**

(supervisors: Zhiyu Jiang) This project performs semantic segmentation on remote sensing images. The innovation is mainly aimed at the lack of remote sensing image training data. The algorithm not only uses traditional data augmentation, such as random flip, rotation, cropping, *etc.*, but also using novel data augmentation methods such as MixUp and CutMix. This project has been successfully concluded.

My Contributions: Algorithm design and slides writing (part).

Engineering Projects

Nov. 2019 | **Mini-Compiler** | **Independent**

(supervisor: Yi Lin) Use Flex and Bison to design a small compiler to compile the common C language code to the intermediate code - quaternion*(operation, arg1, arg2, result)*. The small compiler can compile conditional statements, for-loop statements, while-loop statements, variable declaration statements, and assignment statements. The project received a score of 87/100. [Code]

My Contributions: All algorithm design, code and document writing.

Jul. 2019 | **Make-up Products Electronic Mall Website** | **Group Leader**

(Internship Program) This project mainly completed the website development of a make-up products electronic store, including front-end and back-end development. The back-end is database development, and the front-end uses HTML and javascript mainly. This program helped me achieve excellent internship grades.

My Contributions: Back-end development, front-end and back-end connections, document writing.

Oct. 2018 | **Student Management System** | **Independent**

(supervisor: Hailong Liu) This project mainly uses C# and database knowledge to establish a student management system, which can add, delete, modify and query students' information. This project got a 96/100 rating and resulted a patent. [Code]

My Contributions: All algorithm design, code and document writing.

Selected Awards and HONORS

Nov. 2021	**National Scholarship**	
Nov. 2021	Tencent Scholarship	**First Class**
2020, 2021	Academic Scholarship (Master)	**First Class**
2018, 2019	Academic Scholarship (Bachelor)	**First Class**
Nov. 2017	Academic Scholarship (Bachelor)	**Second Class**
2018, 2019	Outstanding Student of the School	
Nov. 2017	Outstanding Student of the College	
Jul. 2019	Chinese Computer Design Contest	**3rd Prize**
Dec. 2019	Microsoft "Imagine Cup" Innovation and Entrepreneurship Competition	**3rd Prize**
Nov. 2018	National Electronic Design Creative Innovation and Creativity Competition	**2nd Prize**
Nov. 2018	National Mathematical Contest in Modeling (Shaanxi)	**2nd Prize**
Dec. 2018	College E-commerce "Innovation, Creativity and Entrepreneurship" Challenge	**1st Prize**

Courses Performance

Master	Image Processing, Analysis, and Machine Vision	92	Pattern Recognition	93
	The theory, methodology and application of artificial intelligence	92	Scene Matching and Target Recognition Technology	94
	Image and Graphics Analysis	90	Stochastical Process	90
Bachelor	Programming Design Basis Experiment (III)	100	Database Concepts Experiment	96
	Experiment of Advanced Programming Languages	95	Compiler Principles	93
	Pattern Recognition and Machine Learning	93	Programming Design Basis (III)	90

Skills Summary

Programming Language:	C/C++, MATLAB, Python	Framework & Package:	Pytorch, Qt, Visual Studio
Typesetting & Graphing:	TEX and Visio	English Qualification:	CET6-542 (IELTS Preparing)