Zhijie Wang

Research Interests

Semantic Segmentation, Domain Adaptation, Few-shot Learning, and Multimodal Models

Education

Tohoku University, Doctor of Philosophy — 2019.10 - 2022.9
Computer Vision Lab., Advisor: Prof. Takayuki Okatani — *Sendai, Japan*

Shandong University, Master of Science — 2016.9 - 2019.6
Visual, Sensing and Intelligent System Lab., Advisor: Prof. Wei Zhang — *Jinan, China*

Ajou University, Visiting Student in Electrical and Computer Engineering — 2016.2 - 2016.5
Supported by Outstanding Undergraduate Scholarship from China Scholarship Council — *Suwon, South Korea*

China University of Petroleum, Bachelor of Science — 2012.9 - 2016.6
Talented Student Class — *Qingdao, China*

Work Experience

RIKEN — 2022.12 - Present
Researcher, Center for Advanced Intelligence Project (AIP) — *Sendai, Japan*

- Project: Domain-specific multimodal models (Cooperation w/ The University of Tokyo)
  - Build multimodal chatbots for the geological domain

Tohoku University — 2019.11 - 2022.9
Research Assistant, Computer Vision Lab. — *Sendai, Japan*

- Project 1: Reflection removal for vehicle front windshields (Cooperation w/ DENSO)
  - Built synthetic datasets for reflection removal
  - Tested different reflection removal algorithms
- Project 2: Unsupervised domain adaptation (UDA) algorithms for semantic segmentation
  - Analyzed UDA methods for semantic segmentation
  - Proposed CRA, an UDA method with SOTA performance for semantic segmentation
- Project 3: Few-shot semantic segmentation
  - Proposed IFSS with SOTA performance on few-shot segmentation

Sony AI — 2022.3 - 2022.6
Research Intern, Privacy-Preserving Machine Learning Team — *Tokyo, Japan*

- Project: Computer vision algorithms for edge devices (Cooperation w/ Sony Semiconductor Solutions Group)
  - Proposed a training pipeline including the unsupervised pre-training and semi-supervised fine-tuning to save the labeling cost of computer vision tasks

Rakuten Institute of Technology — 2021.7 - 2021.9
Intern Research Scientist, Vision Program — *Tokyo, Japan*

- Project: Scene text segmentation methods for Japanese
  - Worked on the domain gap of text segmentation between different languages (English/Japanese)
  - Built synthetic Japanese / English text segmentation datasets for research
  - Tested existing text segmentation methods and proposed a new method to reduce the domain gap

Ficha Inc. — 2019.6 - 2019.8
Research Intern, Beijing Office — *Beijing, China*

- Project: Lightweight semantic segmentation network for autonomous driving scenario
  - Improved attention modules for lightweight segmentation networks to boost speed

Tencent AI Lab. 2018.1 - 2019.5

Research Intern, Computer Vision Center *Shenzhen, China*

- Project 1: Classification algorithms
  - Ranked 20 / 428, iMaterialist furniture classification challenge at FGVC5 (CVPR 2018 Workshop)
- Project 2: Semantic segmentation algorithms
  - Detecting suitable ad positions in TV series using segmentation algorithms
  - Proposed and patented a semantic segmentation method based on image enhancement
- Project 3: Medical image analysis
  - Ranked 11 / 192, ISIC skin lesion boundary (potential cancer area) segmentation challenge

Conference Papers

1. Tiezhu Sun, Wei Zhang, **Zhijie Wang**, Lin Ma, Zequn Jie. Image-level to Pixel-wise Labeling: From Theory to Practice. The 27th International Joint Conference on Artificial Intelligence (IJCAI 2018)
2. Mingxin Zhang, **Zhijie Wang**, Tiezhu Sun, Xiaolei Li. Salient Object Detection by Pyramid Networks with Gating. The 2019 IEEE International Conference on Robotics and Biomimetics (ROBIO 2019)

Journal Papers

1. **Zhijie Wang**, Ran Song, Peng Duan, Xiaolei Li. EFNet: Enhancement-Fusion Network for Semantic Segmentation. Pattern Recognition
2. **Zhijie Wang**, Xing Liu, Masanori Suganuma, Takayuki Okatani. Unsupervised Domain Adaptation for Semantic Segmentation via Cross-region Alignment. Computer Vision and Image Understanding
3. **Zhijie Wang**, Wei Zhang, Xuewen Rong, Yibin Li. Salient Object Detection with Adversarial Training. IET Image Processing

Preprints

1. **Zhijie Wang**, Masanori Suganuma, Takayuki Okatani. Improved Few-shot Segmentation by Redefinition of the Roles of Multi-level CNN Features. arXiv:2109.06432
2. **Zhijie Wang**, Masanori Suganuma, Takayuki Okatani. Rethinking Unsupervised Domain Adaptation for Semantic Segmentation. arXiv:2207.00067

Patents

1. A Semantic Segmentation Method, CN110163862A

Professional Services

1. Invited to serve as a reviewer for IJCV, PR
2. Invited to serve as a reviewer for CVPR, ICCV, ECCV, ACCV, ACML

Awards and Honors

1. Outstanding Graduate Student, China University of Petroleum
2. Outstanding Freshmen Scholarship, Shandong University
3. Global Hagi Ph.D. Student Scholarship, Tohoku University

Grants

1. Pioneering Research Support Project, Japan Science and Technology Agency

Others

I'm one of the founding employees of Foresemi Microelectronics, a startup based in Shenzhen.

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