Curriculum Vitae

Education

Sichuan University (2017.9 - 2020.6)

Tiansi Lab, College of Computer Science
Master of Engineering, expected in 2020.6
Major in Software Engineering
Supervised under Prof. Yi-Fei Pu
GPA: 3.20 / 4.0

Chongqing University of Posts and Telecommunications (2013.9 - 2017.6)

School of Software Engineering
Bachelor of Engineering, received in 2017.6
Major in Software Engineering
GPA: 3.28 / 4.0

Publications

1. **Yucai Bai**, Qiang Dai, Lingxi Li, Long Chen*, et al. **Extremely Low Resolution Action Recognition with Spatial-Temporal Attention Transfer** (submitted to ECCV2020)
2. **Yucai Bai**, Lei Fan, et al. **Monocular Outdoor Semantic Mapping with a Multi-task Network**, accepted by IEEE/RSJ International Conference onIntelligent Robots and Systems(IROS) 2019
3. **Yucai Bai**, Sen Zhang, Miao Chen, et al. **A Fractional Total Variational CNN Approach for SAR Image Despeckling**, accepted by International Conference on Intelligent Computing(ICIC) 2018
4. Miao Chen, Yi-Fei Pu*, **Yu-Cai Bai**, **A Fractional-Order Variational Residual CNN for Low Dose CT Image Denoising**, accepted by International Conference on Intelligent Computing(ICIC) 2019

Experiences

3D Semantic Reconstruction from a Monocular Camera with a Novel Multi-task Network (2018.8 - 2019.2)

This work was performed when I studied at Institute of Unmanned Systems @SYSU as a summer research intern, under the supervision of Prof.Chen.

We explore the interplay between low-level features for both depth and semantic prediction. The proposed network can produce **the depth and semantic maps simultaneously**, which provides basic knowledge for further semantic map reconstruction. We apply **image segmentation techniques** to **refine the depth prediction** to reduce the fluctuations caused by convolution layers. The final map is saved in **a memory-friendly way** to present a large-scale urban scene.

The corresponding paper is accepted by IROS 2019.

Non-compliance Action Detection of Court Scene in Surveillance Videos (2019.3 - Present)

As the team leader, I designed and led the entire project, including **a detection algorithm of the non-compliance actions in real-time** and **the production of corresponding datasets**. The detection is divided into two stages. Firstly, we use the **object detection** algorithm to detect people and crop the corresponding area. Then we use the **image-based algorithm** to process the easy-to-classify categories and **3D convolution network** for more complex actions.

We won **2nd** in the action recognition track of **Teda·Huabo cup innovation and entrepreneurship challenge.**

Extreme Low Resolution Action Recognition (2019.5 - Present)

In order to solve the problem that the target in the back corner of the court is too small, we proposed a new method to recognize **Extreme Low-Resolution Action**. We make full use of the **high-resolution information** of **separate spatial and temporal features** to promote low resolution recognition by **acquiring better attention**. Experiments show that our proposed method can improve LR recognition accuracy **up to 5.83%**. The results achieve **state-of-the-art performance** on 12*16 HMDB51.

The corresponding paper is submitted to ECCV 2020.

SAR Image Despeckling with Fractional Total Variational Loss (2017.11 - 2018.5)

Motivated in **Applications in Fractional Calculus** Course, we tried to apply fractional calculus to image denoising.

In terms of **long-term memory, non-locality, and weak singularity,** fractional differential of an image can preserve **the low-frequency contour feature in the smooth area, and non-linearly**

keep high-frequency edge information and texture information. We proposed **FID-CNN** with a 8 layer CNN network to feature extraction and fractional total variational loss to preserve details of image. Ablation experiments were carried out to demonstrate the effectiveness of the method.

The corresponding paper is accepted by International Conference on Intelligent Computing 2018.

ZBJ.COM Inc. Front-End Engineer Intern (2015.9 - 2016.2)

Work in Basic Technology Department.

Involved Projects

- Image Format Update (from jpg/png -> webp).
- Developed web sites Bajie Account, Bajie City pages

Honors

- Second Prize Merit-based Scholarship, SCU 2019.7
- Second Prize, 6th Teda · Huabo Cup, Action Recognition Track, 2019.6
- Excellent Postgraduate Student, SCU 2018.9
- Excellent Graduation Thesis, CQUPT 2017.6
- Third Prize Merit-based Scholarship, CQUPT 2015.9

Technical Strengths

- Programming Languages: Python, JavaScript, C++
- Deep Learning Framework: PyTorch, TensorFlow

English Language LevelInformation Page

- IELTS: 6.0
- CET(College English Test) - 6

Information Page

- Homepage: http://raymondbyc.github.io/
- GitHub: https://github.com/RaymondByc/
- Google Scholar: https://scholar.google.com/citations?user=zEhtuI0AAAAJ&hl=zh-CN