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Education

16.09-20.06 **Bachelor**, *University of Chinese Academy of Sciences*, Biological science, GPA: 3.90/4.00.

19.01-19.06 **Bachelor**, *Columbia University*, Visiting program, GPA: 4.00/4.33.

20.09-23.06 **Master**, *Institution of Automation, Chinese Academy of Sciences*, Pattern recognition and intelligence system.

- Lab: Key Laboratory of Molecular Imaging, Chinese Academy of Sciences
- Research Interests: Medical image analysis

Competitions

Kaggle (Solo Gold Medal 6/1505)

Sartorius - Cell Instance Segmentation

Instance segmentation

In this project, it is noticed that cells were small and densely distributed. So, sliding-window and large-scale training and inferencing were applied to reduce number of objects in a single image and match the object size with two-stage detector's anchor size. In post-processing, a new overlap-fixing algorithm were designed. compared with public algorithms, it brought significant improvement in computation speed, memory usage and accuracy.

2020 8th CCF Big Data and Computation Intelligence Competition (1st prize 1/1998)

Track: Data Security Oriented Data Content Ranking and Classification

Text classification

In this project, according to the low-dimension manifold in high-dimension space hypothesis, t-SNE and DBSCAN were applied to deep learning features of pretrained Bert, which almost finished unsupervised classification problem. Then, pseudo-label was used to solve semi-supervised problem. The proposed method significantly outperformed other teams' methods, and received special attention from judges.

2021 iFLYTEK A.I. Developer Competition (3rd prize 3/739)

Track: Advertising Picture Material Classification Algorithm Challenge

Image classification

In the project, it is noticed that there were large amount of texts in E-commerce advertising images. So OCR was applied to extract text from images, and change the image classification problem to multi-modality classification problem. Image and text classifiers were trained respectively. Then, pseudo-label was used to integrate image and text information and fine-tune the final model. After multi-modality integration, classification accuracy was significantly improved.

Other Prizes

- Kaggle: Competition Master (1x Gold, 2x Silver)
- Kaggle: TensorFlow - Help Protect the Great Barrier Reef (Silver Medal)
- Kaggle: Hubmap - Hacking the Kidney (Silver Medal)
- 2021 Tianchi: Real-World Image Forgery Localization Challenge (1st prize)
- 2021 *Shengteng Cup* Remote Sense Image Analysis Algorithm Challenge (3rd prize)
- 2021 *Sodic* Global Open Data Application Innovation Competition (2nd prize)
- 2020 DataFountain Green Future Competition (2nd prize)
- 2020 3rd *Golden Wind Cup* Energy Innovation Challenge (Grand prize)

Publications

Accepted Zhang F, Zhong LZ, **Zhao X**, et al. A deep-learning-based prognostic nomogram integrating microscopic digital pathology and macroscopic magnetic resonance images in nasopharyngeal carcinoma: a multi-cohort study. Ther Adv Med Oncol. 2020 Dec 14;12:1758835920971416.

Under review **Zhao X**, et al. Deep learning signatures reveal multiscale intratumor heterogeneity associated with biological functions and survival in recurrent nasopharyngeal carcinoma.