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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.

2022 Tianchi Big-Data Competition

Track: Real-Word Image Forgery Localization Challenge

Semantic segmentation

In this project, we designed a multi-model cross-pseudo-label training strategy. Utilizing the feature extraction preference of CNN and Transformer, we used two kinds of models to generate pseudo-label and supervise each other. Due to our special design on models, data and training, our models showed good robustness between different datasets and excelled other competitors by a large gap in final phase of this competition.

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.

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 iFLYTEK A.I. Developer Competition (3rd 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

[1] **X. Zhao** et al., "Deep learning signatures reveal multiscale intratumor heterogeneity associated with biological functions and survival in recurrent nasopharyngeal carcinoma," Eur J Nucl Med Mol Imaging, Apr. 2022, doi: 10.1007/s00259-022-05793-x.

[2] F. Zhang, L.-Z. Zhong, **X. Zhao**, 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, vol. 12, p. 1758835920971416, 2020, doi: 10.1177/1758835920971416.