Su Ri

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🖨 26   ⚥ Male   🏠 ChangSha

💼 Recommendation Algorithm, OOD generalization, Causal Analysis

Education Background

Central South University `985` `Double 1st-Class`   2020.09 - 2023.06

Statistics Master School of Mathematics and Statistics   Changsha, Hunan

GPA:3.66 / 4.00 Related Courses: Artificial Intelligence Algorithms (98), Data Mining (92), Statistical Learning (88)

TaiYuan University of Technology `211` `Double 1st-Class`   2015.09 - 2019.06

Mathematics and Applied Mathematics Bachelor School of Mathematics and Statistics   Taiyuan, Shanxi

Courses: Advanced Mathematics I (136/150), Advanced Algebra (97,86), Probability Theory (95), Math-Statistics (90),

Knowledge & Skills

- **Theoretical basis**: Advanced algebra & mathematical statistics, Stochastic process; DL & ML knowledge；

- **Programming skills**: Python (PyTorch, Pandas, plt, etc.), SQL (understanding), C++ (beginners), LaTex (proficient);

- **Deep learning**: classic CTR model & MTL model, classic CNN model, tree structure machine learning model, etc.

- **Language skills**: CET-6(pass), IELTS(6.5--Reading:7.5, Speaking:6.5);

Research, Project & Competition Experience

▲ **Research on CTR prediction Model algorithm based on parallel structure**   2022.03 - 2023.02

Model design, code implementation, paper writing

1. Construct a parallel CTR model with different feature crossing modes, and use soft selecting gated module and residual link with parameters to solve the phenomenon of weak gradient in the training process.

2. Expand the underlying generalization of sharing in the multi-task scenario, and use the Kernel-like method explicit mapping and virtual gradient scaling to strengthen the balance between different tasks.

3. Experiment on Huawei FuxiCTR framework (Criteo, Avazu, Ali-CCP, WeChat and other data sets). The model achieves SOTA and improves interpretability.

▲ **Middle ear disease intelligent diagnosis algorithm development**   2020.09 - 2021.06

Responsible for the project, part of the code implementation, paper writing

1. Responsible for the main cooperation and communication with the otolaryngology Department of Xiangya Hospital, and the auxiliary diagnosis of two kinds of otitis media based on the high-density CT scan data of the brain.

2. Resampling the data to solve the phenomenon caused by the serious imbalance of the original category; Segmentation network is used to solve the problem of invalid noise of original data before classification.

3. Based on the continuity of CT data, 3D-CNN was used for the final diagnosis, and the accuracy of the test set was 96.5% (improved by about 10%), with an average AUC of 0.983.

Honors & Awards

National Scholarship (Postgraduates), Awarded by Ministry of Education of PRC   2022.09

Outstanding graduate of Central South University (Postgraduate)   2023.03

Outstanding Student in School of Mathematics and Statistics, Central South University   2022.10

2021 Chian Mathematical Modeling Contest (Postgraduates) National third prize (40%);   2021.12

Academic Competition Experience

▲ 2022 Huawei AI Algorithm Competition -- Cross-domain CTR estimation   2022.07 - 2022.08

Scheme determination, feature engineering, code implementation

1. Construct statistical features (click, exposure, traversal) on the advertising side and screen them; use the item clustering results and GBDT on the recommendation side to determine the user's enhanced features.

2. Conduct experiments with tree model and depth model, and then conduct model fusion and submit results. The test set AUC of A ranking in the preliminary competition was 0.827442 (top 10%).

▲ 2021 National Postgraduate mathematical Modeling -- Air quality forecast   2021.10

Data analysis, method modeling, code implementation

1. Based on the measured and predicted weather and pollutant concentration data of a place, statistical analysis is carried out on the data, and a model is built to give the forecast value of the specified three days.

2. The neural network with Wide Deep framework is used to complete the secondary prediction of pollutant concentration in a single region, and then the location information of different regions is utilized to build the secondary weather prediction model based on regional cooperation. The overall convergence of the model is good, and the prediction task is completed.

Paper Publication

▲ Main research papers

1. **Su R**, Hounye A H, Hou M, et al. PHN: Parallel heterogeneous network with soft gating for CTR prediction[C]//Artificial Intelligence: Second CAAI International Conference, CICAI 2022, Beijing, China, August 27–28, 2022, Revised Selected Papers, Part II. Cham: Springer Nature Switzerland, 2023: 413-424.

2. Kong ML, **Su R***, Zhao SJ, et al. DEPHN: Different Expression Parallel Heterogeneous Network using virtual gradient optimization for Multi-task Learning[C]//International Joint Conference on Neural Networks, IJCNN 2023, Queensland, Australia, June 18-23, 2023, (CCF-C, accepted)

3. **Su R**, Song J, Wang Z, et al. Application of high resolution computed tomography image assisted classification model of middle ear diseases based on 3D-convolutional neural network[J]. Journal of Central South University. Medical Sciences (CN), 2022, 47(8): 1037-1048. (CSCD)

4. Wang Z, Song J, **Su R**, et al. Structure-aware deep learning for chronic middle ear disease[J]. Expert Systems with Applications, 2022, 194: 116519. (CCF-B)

▲ Other participating research papers

1. Cong C, Song J, **Su R**, et al. Structure-Constrained Deep Feature Fusion for Chronic Otitis Media and Cholesteatoma Identification[J]// Multimedia Tools and Applications. (CCF-C, accepted)

2. HE F, DAI Y, LI Z, **Su R**, et al. Deep Learned Esophageal Contraction Vigor Classification on High-resolution Manometry Images[J]. Journal of Electronics & Information Technology (CN), 2022, 44(1): 78-88. (CSCD)