Jiansheng Wang

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Github · Personal Homepage

Education

Northwest Agriculture and Forest University (NWAFU), Shaanxi, China 2021 – Present

Undergraduate (Major) in Electrical Engineering and Automation
Undergraduate (Minor) in Artificial Intelligence (Software Engineering)

- GPA 3.50/4.0 (Rank 11/74)
- Merit Student (Top 3%, 2023 & 2024)2 times
- School Specialty first scholarship (Top 10%, 2022 & 2023)

Publication

- Sichun Luo, **Jiansheng Wang**, Aojun Zhou, Li Ma and Linqi Song. Large Language Models Augmented Rating Prediction in Recommender System, ***ICASSP 2024***, April 2024.
- **Jiansheng Wang**, Kaidong Shi, Tingting Zhang, Bin Wang, Fengjiao Wu. Wind Turbine Gearbox Fault Diagnosis Based on Time-Shift Multi-scale Attention-based Slope Entropy and SCA-SCN (to be submitted).

Experience

Large Language Models (LLMs) augmented rating prediction in recommender system
City University of Hong Kong
Research Assistant, Advisor: Prof. Linqi Song 2023/07 – 2023/11

- Implemented multiple traditional recommendation models (NMF, DeepMF, SVD and etc) and compared the performance with a **LLM (Llama-7b) [Linux, PyTorch]**
- To mitigated the limitation of LLMs in understanding collaborative information, we proposed an LLM-augmented rating prediction in recommender system, which optimized the performance by adding features generated by the LLM.
- The proposed model effectively reduces the RMSE and MAE of multiple traditional recommendation models (DeepFM, NFM, DCN, AFM, xDeepFM, AutoInt). Publish a co-author paper to ICASSP'24

Protein functional sites identification based on positive and unlabeled learning method
Research Assistant, Advisor: Prof. Ze Liu, NWAFU 2022/07 – Present

- Proposed a PU-learning-based (positive and unlabeled learning) model for predicting plant protein functional sites (S-acylation sites). The data utilized in this research is composed of 3066 positive samples and 7764 unlabeled samples.
- Conducted feature engineering, identifying 213 key features including AAC, CKSAAP, and PSSM by introducing PU extra trees to score feature importance.
- Introduced two reduced amino acid alphabet to simplify the sequence to reduce the feature dimension of CKSAAP and bring more information on protein structure and amino acid chemical property.
- To solve the problem brought by lack of labeled negative samples, utilized biased-SVM algorithm to build models and multiple currently effective methods to evaluate the model performance.
- Developed a GUI interface and compiled it into an executable program [PyQt5]. The program won the first prize in Chinese Collegiate Computing Competition (Northwest division).
- The AUC of proposed model is higher than 0.95, and preparing a paper to JOURNAL OF PROTEOME RESEARCH.

Wind turbine gearbox fault vibration signal identification based on attention-based slope entropy
Research Assistant, Advisor: Prof. Bin Wang, NWAFU 2023/11 – 2024/05

- Analyzed the vibration signal of wind turbine gearbox based on the dataset with 200 samples from each class under 5 different gear working conditions.

- Slope Entropy needs prior knowledge to determine parameters, and Attention Entropy ignores the information of the amplitude difference. So we proposed Time-shift Multiscale Attention-based Slope Entropy to extract the features of vibration signals [Python].
- The model applied in our work is Stochastic Configuration Network (SCN) with one single hidden layer. And we utilized one kind of swarm intelligence algorithm Sine Cosine Algorithm (SCA) to optimize the parameters of SCN, improving the model performance [Matlab].
- We also implement the code of multiple kinds of entropy, including 8 different time sequence entropy methods and their variants. The code was gathered as a function toolbox and has been uploaded on my GitHub.
- The Accuracy of our model reached 0.998. Prepare a paper to MACHINE TOOL & HYDRAULICS.

Skills

- Programming Languages: C, Python, Assembly language (MCS-51)
- Platform: Linux
- Single chip microcomputer (MCS-51): Keil μVision, Proteus, Altium Designer
- Development: AutoCAD, MATLAB, PyTorch, PyQt, Latex, Endnote

Honors and Awards

Chinese Collegiate Computing Competition (Northwest division) First prize
RoboWork'2022 First prize