Yixin Liu

19927522401 | seyixinliu@mail.scut.edu.cn
ShenZhen
www.csyixinliu.com

EDUCATION

South China University of Technology   Aug 2018 - Aug 2022

Major in Software Engineering (Bachelor)   Guangzhou

GPA: 3.82/4.00 **Ranking:** 4%(12/279) **English Ability:** CET-4: 598 CET-6: 533

Related Courses: *Principles of Compiler* (98), *Probability And Statistics* (100)*, Calculus* (97)*, Linear Algebra* (94)*, Operating System* (90), *Artificial Intelligence* (93), *Algorithm Design and Analysis* (91), *Data Mining* (91), *Software design*(91)

Scholarship: National Scholarship *x2* (2021, 2020), SCUT Premium Scholarship (2019)

RESEARCH EXPERIENCE

Conditional Automated Channel Pruning for Deep Neural Networks - First Author   Jul 2020 - Sep 2020

- **Background**: *Channel pruning* is an important method in model compression. Under the condition of multiple compression rates, traditional methods have to repeat the searching process multiple times, which can be unnecessary and inefficient. To tackle this problem, we propose a novel method that simultaneously produces compressed models under different compression rates through a single channel pruning process.

- **Work and Contribution:** ①Formalize the problem as a Markov decision process (MDP), and design the state space and action space. ②Purpose an RL-based framework to solve the MDP problem, and design a reward function based on *Reward Shaping*, which significantly speeds up the learning process. ③Purpose a *constraint-guaranteed* strategy to limit the action space, which guides the agent to produce compressed networks that meet the constraints. ④Under three specific compression rate on ResNet-50, our methods is 3x~800x faster than the three baseline methods.

- **Results:** Accpected by *IEEE Signal Processing Letters* (SCI-JCR-Q2, CCF-C).

Priority Prediction of Sighting Report Using Machine Learning Methods - First Author   Feb 2021

- **Background**: The Asian hornet, as an alien species, has brought great damage to the ecology of North America. The government usually mobilizes citizens to submit nest sighting reports, and then strike out targeted exterminations to achieve high-efficiency prevention and control. However, given that most of the report submitters lack knowledge of the species and there are many false positives in the report, identifying high-confidence reports from the masses of sighting reports is crucial. Based on the migration mechanism and report content, we propose a report priority prediction method.

- **Work and Contribution**: ①Design the Asian hornet's propagation model on the migration habits and Gaussian distribution assumption. ②Predict the reliability of the report using Logistic Regression based on the well-designed features of sighting reports. ③Quantify the confirmations between reports to determine the priority; Achive weighted accuracy of *83.5%*.

- **Results**: Finalist Winner (rank 2%) in *2021MCM*, *p*aper accpected by *SEAI 2021 (EI Conference)*

Dual-channel Feature Interaction Graph Convolutional Network   Feb 2021 - Apr 2021

- **Background**: Graph convolution networks (GCNs) have a strong ability to express features in non-euclidean graph learning. Traditional graph convolution networks (GCNs) can't learn the node representation well when solving the problem of feature sparseness and topology sparseness, which exists in most datasets of real world networks. This work propose an end-to-end GCN framework to learn node representations in topology and feature space jointly.

- **Work and Contribution**: ①Design node feature similarity matrix to construct the adjacency matrix of nodes on feature space. ②Utilize the *Hilbert-Schmidt Independence Criterion (HSIC)* to enhance the disparity of learned embeddings.

- **Results**: submitted to AAAI2022 (CCF-A), under review (has passed the first round).

PROJECT EXPERIENCE

Bert-based Legal Judgment Document Amount Entity Extraction Model - Leader   Feb 2021

- **Description**: In actual legal business requirements, the extraction of the amount fields in the legal judgments document is usually done manually, which is time-consuming and labor-intensive. This project implements a BERT-based model for legal judgment amount entity extraction, enabling automatic extraction of ten types of amount entities.

- **Work**: ①Design *"TF-IDF+Naive Bayes"* classification scheme for the preliminary screening of judgment texts and thus improve processing efficiency. ②Initial screening of amount entities based on *Regular Expressions*; Construct classification feature based on context; Design "*BERT+ Logistic Regression*" scheme to complete the final prediction; Archive weighted accuracy of *93.5%.* ③Package the algorithm as docker and deploy it on the server.
- **Results**: [A software copyright authorized](). A software package delivered to Southern Big Data Co.,Ltd.

Covid-19 Prediction Model based on Huber Regression and Hierarchical Feature - Leader   Oct 2020

- **Description:** In the COVID-19 prediction and evaluation competition at the 6th China Health Information Processing Conference, given the time series data and regional characteristic data of confirmed cases in three regions, we need to predict the confirmed cases for the next 7 days.
- **Work:** ①Data cleaning for outliers; design a hierarchical classification feature coding scheme to encode the text information. ②Conduct sufficient experiments to comprehensively compare the performance of multiple models. ③Improve the model based on Huber Regression, which significantly reduces the sensitivity of model fitting to data outliers.
- **Results**: [The championship of this track](); [Gave an oral presentation.]()

COMPETITION EXPERIENCE

Finalist Winner (2%) - 2021 American Mathematical Contest in Modeling	2021-04
Champion - The 6th China Health Information Processing Conference (Evaluation 4)	2020-11
Runner-up - National Undergraduate Software Practice and Innovation Ability Competition in 2020	2020-11
Provincial First Prize - Contemporary Undergraduate Mathematical Contest in Modeling	2020-10
Provincial Second Prize - National Mathematics Competition for College Students	2020-10