YINGHAO CAI

Southeast University, Nanjing, China, Top10 University(985) in China

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EDUCATION

Sept. 2020 – Jun. 2024 **School of Artificial Intelligence, Southeast University** Nanjing, China

Major: Artificial Intelligence

- GPA:3.88/4; Average Score: 90.3/100; Rank: 3/94

EXPERIENCE

In Progress **Exploration of Graph Expressiveness** Dartmouth, NH

Member

- Explored the mismatch between the improved model's express itself and the absence of noticeable performance enhancements
- Revealed a lower sensitivity of higher-performance models to disruptions in first-order neighbors compared to second-order neighbors
- Focused on structural perturbations and developing improved metrics for better performance

In Progress **Multi-relation Graph Learning through Pseudo-labeling** Dartmouth, NH

Member

- Focused on heterophily graphs, focusing on node connections across categories
- Pseudolabels on edges were used
- Built an outperformed model on node classification task

In Progress **Identification of Influential Group in Attributed Graph through Explaining Graph Neural Network** Nanjing, China

Leader

- Novelly modeled the problem as a combinatorial optimization problem
- Adopted the reinforcement learning algorithms to guide constraint-based planning search
- Achieved a comparative performance

2022 – 2023 **Sparse and Low-Rank High-Order Tensor Regression via Parallel Proximal Method** Nanjing, China

Member

- Proposed an efficient algorithm to solve the problem of high-dimensional low-rank tensor regression
- Identified a practical scenario, video classification for the algorithm and demonstrated its superior performance assisting in the refining of the research and the paper
- Assessed as the second author

Mar. 2023 – Jun. 2023 **Knowledge Engineering Practice: Diabetic Knowledge Graph Construction and Prescription Prediction** Nanjing, China

Leader

- Made the project plan and designed the pipeline of knowledge graph construction
- Completed named entity recognition, a significant step in knowledge graph construction
- Reproduced an algorithm predicting the prescription based on knowledge graph
- Achieve an outstanding accuracy

Mar. 2023 – Jun. 2023 **An Extended Study of Knowledge Neurons: Knowledge Neurons in Multilingual Pretrained Language Models** Nanjing, China

Leader

- Proved the universality of a framework for extracting knowledge neurons presented in the paper *Knowledge Neurons in Pretrained Transformers* and wrote a study report on it
- Designed and conducted experiments with multilingual BERT and other multilingual data sets on different language models
- Got familiar with the design and operation of a whole research project and academic paper writing

Sep. 2022 – Dec. 2022 **Video Caption Challenge Project** Nanjing, China

Leader

- Extracted the audio and video feature vectors from the given videos with ffmpeg and other models and then used S2Vmodel to generate the tags and form the video caption
- Deepened my understanding of the practical application of deep learning technology and strengthened my skills in using learned knowledge to solve real problems
- Achieve the third place in the video captioning competition hold by our lecturer

Mar. 2022 – Jun. 2022 **Image Segmentation of ARDS Patients' Lung Lesion Area** Nanjing, China

Member

- Adopted novelly F3Net recoginizing ARDS patients' lung lesion area and improved the model through ablation study
- Explored the application of image processing in the medical field
- Outperformed the U-Net model, the state-of-art model in such tasks, by 3 points on the maxF metric

Jul. 2022 – Aug. 2022 **Tutor Recommendation System Development** Nanjing, China
Leader

- Built a website to realize the function of recommending graduation design tutors to undergraduate students,
- Collected tutors' information with a web crawler and designed the front-end interface and search recommendation algorithm
- Enriched knowledge of web building and design

2021 – 2022 **Superpixel Segmentation Task based on Deep Clustering** Nanjing, China
Leader

- Solved superpixel segmentation novelly from the perspective of deep clustering
- Adopted and compared two methods (DEC and SENet) to realize the superpixel segmentation
- Outperformed traditional algotrithms in details between superpixel blocks and achieve a comparative performance to supervised algorithms

AWARDS

2020 – 2021 **China National Scholarship**, National Scholarship Review Committee
2020 – 2021 **Merit Student**, Southeast University
2021 – 2022 **Excellence in Social Practice Award**, Southeast University

PERSONAL

Language Skills: English: 97
Software Skills: Python, C++, Matlab; Linux; CSS, HTML, Javascript; Protégé, Neo4j