JIALIN CHEN

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EDUCATION

Shanghai Jiao Tong University (SJTU) *September 2018 - Current*

B.Sc. in Mathematics and Applied mathematics (88/100)

- Honors: Zhiyuan Honors Program (Top 10% at SJTU)
- Research Interests: Graph Neural Networks, Deep learning, Natural Language Processing

RESEARCH EXPERIENCE

Spherical Needlet CNN *July 2021- Current*

Advisor: Yuguang Wang, Institute of Natural Sciences, School of Mathematical Sciences, SJTU

Pietro Liò, Department of Computer Science and Technology, University of Cambridge

- *"Spherical Needlet CNN"* ***(Paper in progress)***
- Proposed a new convolution which is expressive and rotation-equivariant using multi-resolution spherical Needlets
- Applied Shrinkage activation on high-pass signals and gave the rotation-equivariant error bound caused by it
- Experiments show model's strong performance on artificial dataset like rotated-MNIST and real-world tasks like atomization energies regression and detection of brain tumor from MRI

Fast Tensor Needlet Transforms for Tangent Vector Fields on the Sphere *July 2021 – October 2021*

Advisor: Yuguang Wang, Institute of Natural Sciences, School of Mathematical Sciences, SJTU

- *"Fast Tensor Needlet Transforms for Tangent Vector Fields on the Sphere "* ***(Paper submitted)***
- Developed fast tensor needlet transforms, the corresponding decomposition and reconstruction algorithms with nearly linear computational complexity and low redundancy rate based on FFTs
- Conducted detailed numerical studies on three artificial fields and one real-world wind field to demonstrate the effectiveness and efficiency of the developed fast algorithms

Modeling Logical Inference Graph in Natural Language *March 2021 - July 2021*

Advisor: Hai Zhao, Department of Computer Science and Engineering, SJTU

- *"Modeling Hierarchical Logical Reasoning Chains"* ***(Paper submitted)***
- Designed key-phrases extraction algorithm and logical reasoning chain as the components of our proposed holistic graph-based framework handling texts at both discourse level and word level
- Leveraged dual-level attention mechanism to capture the interaction information between phrases and discourses
- Experiments on ReClor and LogiQA (two benchmark logical reasoning datasets) show the great improvement over baselines and the capability to understand more complex logical relationships.

Detection of Social Bias in Financial Text Via Domain Adaptation *May 2020 - February 2021*

Advisor: Yang Bao, Antai College of Economics and Management, STJU

- Proposed a BERT-based framework with downstream fine-tuning mechanisms, FC layers and Text-CNN
- Performed unsupervised domain adaptation from the social media text (e.g. SBIC dataset) to the business text (e.g. conference call of S&P1500) with a certain loss function
- Detected the implicit social bias in language; Predicted the most vulnerable groups (disability, gender, etc.)
- Obtained state-of-the-art performance on SBIC dataset and substantially improved results on social bias detection

AWARDS AND HONORS

- The 2nd Prize of China Undergraduate Physics Tournament
- Meritorious Winner of the Mathematical Contest in Modeling (Top 7%)
- Hanyingjuhua Alumni Scholarship (Top 5%)
- Annual Undergraduate Merit Scholarship (Top 10%)
- Annual Zhiyuan Honorary Scholarship (Top 10%)

LEADERSHIP EXPERIENCE

- Student Union Minister of Organization Department
- Secretary of Piano Association of Shanghai Jiao Tong University

SKILLS

- Programming Language: Python, C++, MATLAB
- Certificates: piano amateur of 10th level, taekwondo red belt