Yuan Sui

(+86) 181-4119-5692 | yuansui08@gmail.com

EDUCATION

Shandong Normal University (SDNU) School of Information Science and Engineering **Jinan, China**

Major: Computer Science, B.S. GPA: **87.2/100** Sept 2019 – July 2023 (expected)

RESEARCH

Learning Causal Representations for Knowledge Graph-based Question Answering

Research Intern in the Institute of Computing Technology, Chinese Academy of Sciences Feb 2021- Jan 2022

Advisor: Dr. Shu-Hui Wang & Dr. Reynold Cheng (Hong Kong University) **Beijing, China**

Publication: Sui, Y., Cheng R., Wang, S., (2022). Learning Causal Representations for Knowledge Graph-based Question Answering. **(Under Review by *KDD 2022 (core ranking: A*) & Knowledge-Based Systems (KBS)* (JCR-Q1 Journal))**

- Proposed a causal interference-based model denoted as the causal filter (CF) using clustering methods to reduce the spurious entity relations and missing link problems in Knowledge Graph-based Question Answering (KGQA) task
- Devised a new mechanism based on their causal correlations produced by CF; experiments on several real-world benchmarks demonstrate the effectiveness and robustness of our method

Learning Causal Representations for Multi-Hop Question Answering over Knowledge Graphs

Research Intern in the Institute of Computing Technology, Chinese Academy of Sciences Feb 2021- Jan 2022

Advisor: Dr. Shu-Hui Wang & Dr. Reynold Cheng (Hong Kong University) **Beijing, China**

Publication: Sui, Y., Feng, S., Zhang, H., Cao, J., Hu, L., &Zhu, N. (2022). Learning Causal Representations for Multi-Hop Question Answering over Knowledge Graphs. **(Under Review by *Knowledge-Based Systems (KBS)* (JCR-Q1 Journal))**

- Constructed a model comprises a causal pairwise aggregator (AP) and a disentangled latent factor aggregator (AC) to alleviate the spurious correlation problem in KGQA
- Proved the effectiveness and efficiency of the proposed approach; test CF-KGQA and other state-of-the-art methods on four public real-world datasets, namely, SimpleQuestions, Webqsp, OpenBookQA, and MetaQA

Trigger-GNN: A Trigger-Based Graph Neural Network for Nested Named Entity Recognition

Research Intern in School of Information Science and Engineering, Shandong Normal University May 2021- Nov 2021

A*dvisor: Dr. Wei Yan & Dr. Liang Zhang (Shandong University)* **Jinan, China**

Publication: Sui, Y., Bu, F.-Y., Hu, Y.-T., & Yan, W., Zhang, L. (2021). Trigger-GNN: A Trigger-Based Graph Neural Network for Nested Named Entity Recognition. **(Under Review by *IJCNN 2022 (core ranking: A)*)**

- Developed a trigger-based graph neural network for the nested NER task in a cost-effective manner; executed the problem into a graph node classification task
- Proposed to capture the global context information and local compositions to tackle nested NER through a recursively aggregating mechanism

Optimization Simulation of Reflow Welding Based on Regional Center Temperature Prediction

Research Intern in School of Information Science and Engineering, Shandong Normal University Jul 2021- Sept 2021

Advisor: Dr. Wei Yan & Dr. Liang Zhang (Shandong University) **Jinan, China**

Publication: *Sui, Y., Bu, F.-Y., Shao, Z.-L., & Yan, W. (2021).* Optimization Simulation of Reflow Welding Based on Regional Center Temperature Prediction. Peking University Core Journals - *Computer Simulation.* **(Accepted and Under Published)**

- Designed a set of reflow optimization strategies for reflow soldering of integrated electronic products and obtained a set of optimal process s parameters for a real-production scenario

- Simulated the process using a first-order ordinary differential equation of the central temperature curve in the welding area

Automatic Knowledge Graph Construction by Efficient Information Extraction

Research Intern in School of Information Science and Engineering, Shandong Normal University Mar 2021- Sept 2021

A*dvisor: Dr. Wei Yan & Dr. Liang Zhang (Shandong University)* **Jinan, China**

Publication: Sui, Y., Bu, F.-Y., & Yang, G. (2021). Automatic Knowledge Graph Construction by Efficient Information Extraction. **(Submitted to *ESWC 2022 (core ranking: A)*)**

- Developed a contextual framework for triple extraction and established a model learning to produce new nodes and identify edges between existing nodes based on predefined relation type templates
- Proposed two algorithms to generate the Chinese music intention knowledge graph and visualized a group of generated triples based on Neo4j

Question Answering System Based on Tourism Knowledge Graph

Research Intern in School of Information Science and Engineering, Shandong Normal University Feb 2021- Jun 2021

A*dvisor: Dr. Wei Yan* **Jinan, China**

Publication: Sui, Y., (2021). Question Answering System Based on Tourism Knowledge Graph, *Journal of Physics: Conference Series (EI-index conference)*, Volume 1883, **(Published)**

- Designed a named entity recognition model for tourism based on Bert-BiLSTM-CRF and built a tourism knowledge graph based on neo4j and protege
- Implemented the whole project using 4000 lines of code, including syntax analysis, semantic analysis, intermediate code generation, and GUI for visualization

Automatic Relation Recognition for Inventive Design

Research Intern in School of Information Science and Engineering, Shandong Normal University Jun 2020- Nov 2020

A*dvisor: Dr. Wei Yan & Dr. Liang Zhang (Shandong University)* **Jinan, China**

Publication: Yan, W., Sui, Y., & Zhang, L. (2020). Learning Causal Representations for Multi-hop Question Answering over Knowledge Graphs. **(Under Review by *Knowledge-Based Systems (KBS)*)**

- Participated in the experimental design and methodological implementation
- Developed regression models to fit design principles and design methods to realize the automatic matching process of TRIZ innovation theory

HONORS AND AWARDS

College **First Prize Scholarship (Top 10%)** at SDNU Nov 2021

Silver Prize of the 7th Internet+ Student Innovation and Entrepreneurship Competition Oct 2021

Bronze Prize **(Top 10%)** of the 3rd National Student Algorithm Design and Programming Challenge Oct 2021

Honorable Mention of the 2021 Mathematical Contest in Modeling Mar 2021

Third prize of the 2020 Contemporary Undergraduate Mathematical Contest in Modeling Oct 2021

LEADERSHIP EXPERIENCE

Founder & Leader, Robotics Lab, Shandong Normal University Mar 2020 – Jun 2021

- Founded the school-level robotics lab and recruited 50 lab members
- Organized an "Open-day," invited approx. 20 primary school students to the lab, and illustrated to the basic knowledge of robotics
- Hosted a reading festival at the school library open to the whole campus and recommended books about robotics to the participants
- Provided small robot equipment for various activities on campus to attract popularity attention

SKILLS

- Programming languages & software: C++, C, Java, Python & Protégé, Neo4j, Visio, Origin.
- Deep learning framework: PyTorch.