# Yuan Sui

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## EDUCATION

**Shandong Normal University**, Jinan, China Sep. 2019 – Expected Jul. 2023
*Bachelor of Computer Science and Technology*

- GPA: **3.72/5.0, 87.2/100** | Rank in major: 10% | First Prize Scholarship
- English Proficiency (TOEFL-iBT): 111 (Reading: 29, Listening: 28, Speaking: 28, Writing: 26)
- Research Areas: Natural language processing, Knowledge graph based question answering, Semantic parsing, Causal inference, Knowledge representation

## RESEARCH EXPERIENCE

### Learning Causal Representations for Knowledge Graph-based Question Answering

***Research Intern in ICT, VIPL Group, Chinese Academy of Sciences*** 2021-02 - 2022-03
***Advisors: Dr. Shu-Hui Wang (ICT, VIPL) & Dr. Reynold Cheng (Hong Kong University)***

- 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
- Publications:
  - Sui, Y., Feng, S., Zhang, H., Cao, J., Hu, L., Zhu, N. (2022). Causality-aware Enhanced Model for Multi-Hop Question Answering over Knowledge Graphs **(Accepted by Knowledge-Based Systems (KBS) (JCR-1, First Author))**
  - Sui, Y., Cheng R., Wang, S., (2022). Learning Causal Representations for Knowledge Graph-based Question Answering. (**Under Review by KDD 2022 (core ranking: A*, First Author)**)

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

***Research Assistant in CAD&VC Group, Shandong Normal University*** 2021-05 - 2022-02
***Advisors: Dr. Wei Yan (SDNU, CAD&VC Group) & Dr. Liang Zhang (Shandong University)***

- 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
- Publications:
  - Sui, Y., Bu, F., Ying, Hu., & Wei, Y., Zhang, L. (2021). Trigger-GNN: A Trigger-Based Graph Neural Network for Nested Named Entity Recognition. (**Accepted by IJCNN 2022 (core ranking: B, First Author)**)

### Optimization Simulation of Reflow Welding Based on Regional Center Temperature Prediction

***Research Assistant in CAD&VC Group, Shandong Normal University*** 2021-08 - 2022-03
***Advisor: Dr. Wei Yan (SDNU, CAD&VC Group)***

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

### Question Answering System Based on Tourism Knowledge Graph

***Research Assistant in CAD&VC Group, Shandong Normal University*** 2020-03 - 2021-01
***Advisors: Dr. Wei Yan (SDNU, CAD&VC Group)***

- 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

- Publications:
  - Sui, Y. (2021). Question Answering System Based on Tourism Knowledge Graph, Journal of Physics: Conference Series, 1883(1), 012064. (**Accepted and published by CIBDA2021 (EI-index conference, First Author)**)

**Intelligent Predictive Maintenance of Hydraulic Systems based on Virtual Knowledge Graph**

***Research Assistant in CAD&VC Group, Shandong Normal University*** 2021-08 - 2022-03

***Advisors: Dr. Wei Yan (SDNU, CAD&VC Group), Dr. Qiushi Cao (Swansea University)***

- Assisted in proposing a virtual knowledge graph-based approach for the digital modeling and intelligent predictive analytics of hydraulic systems; Evaluated the functionality and effectiveness of the approach on predictive maintenance takes under real-world industrial contexts; Proved the capability and feasibility of the approach in the implementation of digital modeling, data access, data integration, and predictive analytics
- Publications:
  - Yan, W., Shi, Y., Sui, Y., Tian, Z., Wang, W., & Cao, Q. (2022). Intelligent Predictive Maintenance of Hydraulic Systems based on Virtual Knowledge Graph. (**Under Review by Robotics and Computer-Integrated Manufacturing (JCR-1, Third Author)**)

## COMPETITIONS AND AWARDS

- **7th Internet+ Student Innovation and Entrepreneurship Competition**, Honorable Mention Feb. 2020
- **3rd National Student Algorithm Design and Programming Challenge**, Bronze Prize (10%) Sep. 2021
- **2021 Mathematical Contest in Modeling (MCM)**, Honorable Mention Feb. 2021
- **2020 Contemporary Undergraduate Mathematical Contest in Modeling**, Third Prize Dec. 2020

## WORKING EXPERIENCE

**Founder & Leader, Robotics Lab, Shandong Normal University** 2020-03 – 2021-06

- 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 AND OTHERS

- Software & Programming Languages: C++, C, Java, Python & Protégé, Neo4j, Visio, Origin, Latex
- Deep learning framework: PyTorch, Tensorflow, Huggingface