Kefei Duan

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Research Interests

Natural Language Processing/Understanding, Question Answering System, Knowledge Extraction, Human-Computer Interaction

Education

Peking University, Beijing, China Sep. 2019 - Present

Bachelor of Science in Intelligence Science and Technology
GPA: 3.741/4.0
Advised by Prof. Ming Zhang

Publications

Zequn Liu, **Kefei Duan**, Junwei Yang, Hanwen Xu, Ming Zhang, Sheng Wang. MetaFill: Text Infilling for Meta-Path Generation on Heterogeneous Information Networks. EMNLP 2022.

Awards

China Merchants Securities Scholarship (Beijing, Peking University) Sep. 2022

Three Good Student Award (Beijing, Peking University) Sep. 2022

National Inspirational Scholarship (Beijing, Peking University) Oct. 2022

National Scholarship Sep. 2021

* Highest scholarship awarded by the Chinese government, <0.1%

Three Good Student Award (Beijing, Peking University) Sep. 2021

Third Class Scholarship (Beijing, Peking University) Sep. 2020

Merit Student Award (Beijing, Peking University) Sep. 2020

Experience

Research Assistant Aug. 2021 - Jun. 2022

Paul G. Allen School of Computer Science & Engineering, University of Washington, Seattle

* I work on this project under the supervision of Zequn Lin, a Ph.D. student at Peking University. The professors guiding us are Prof. Sheng Wang at University of Washington and Prof. Ming Zhang at Peking University.
* Key Idea: To formulate meta-path identification problem as a word sequence infilling problem, which can be advanced by Pretrained Language Models.
* Main Contributions: In this project, my main contributions are to do some preliminary research, implement the baselines and process some data.
* Title: *MetaFill: Text Infilling for Meta-Path Generation on Heterogeneous Information Networks*
* Accepted to EMNLP 2022

Research Intern Nov. 2021 - Nov. 2022

Montreal Institute for Learning Algorithms (MILA), University of Montreal

* I work on this project under the supervision of Meng Qu, a Ph.D. student at Quebec Artificial Intelligence Institute. The professors guiding us are Prof. Jian Tang at Quebec Artificial Intelligence Institute and Prof. Ming Zhang at Peking University.
* Key Idea: To link entities in sentence to entities in Knowledge Graph and utilize the structured information, i.e.relational paths, in KG to facilitate Relation Extraction.
* Main Contributions: In this project, my main contributions are to do some preliminary research, implement our algorithm and baselines, do experiments and write the paper.
* Title: *Relation Extraction via Joint Reasoning with Texts and Knowledge Graphs*
* Rejected by EMNLP 2022. We have perfected this work based on the suggestions and questions proposed by reviewers, being ready to submit it again.

Research Intern Jul. 2022 - Sep. 2022

Paul G. Allen School of Computer Science & Engineering, University of Washington, Seattle

* I work on this project under the supervision of Prof. Sheng Wang at University of Washington.
* In this work, we mainly want to focus on Biomedical Document-level Relation Extraction, using Knowledge Graphs to facilitate relation extraction.
* Current Progress: For now, we have done some preliminary research and conducted some experiments using some baselines. We have implemented a simple model based on our idea. But more things need to be done. Due to time constraints, this project was temporarily put on hold. We will start working on this project again afterwards and it will become my thesis topic.

Research Intern May. 2021 - Present

Dlib, Peking University, Beijing, China

* Attend weekly group meetings
* Advised by Prof. Ming Zhang and PhD Zequn Liu.
* Work with other students on some projects.

Teaching Assistant Sep. 2022 - Dec. 2022

Peking University, Beijing, China

* Teaching Assistant of course *Introduction to Computation (C)*
* Work with Prof. Liyan Qian and other three Teaching Assistant
* Help students with homework and course problems, and make them more familiar with Python

Coursework Projects

Artificial Intelligence for Drug Mar. 2022 - Jun. 2022

Project for course *Technology Innovation and Enterpreneurship*. Aim to use artificial intelligence to facilitate the production of drug-relief medicine. My main role in this project is to lead the group and use some existing algorithms to predict the drug activities.

Single Image Reflection Removal Mar. 2022 - Jun. 2022

Project for course C*omputational Photography: Image Formation Theory and Deep Learning Practice*. Work on my own and aim to remove the reflection in a image.

Analysis of the Author of The Story of the Stone Mar. 2022 - Jun. 2022

Project for course *Thinking in programming*. Work in a group of two and aim to use some machine learning technics to analyze whether the first 80 chapters and the last 40 chapters of Dream of the Red Chamber were written by the same person.

Machine Learning Translation Mar. 2021 - Jun. 2021

Project for course *Learning Data Science with Python*. Work in a group of two and aim to translate English corpus into Chinese.

Body Posture Detection Mar. 2021 - Jun. 2021

Project for course *Machine Learning*. Work in a group of five and aim to detect the posture of one person and give it to another person.

Medical Concept Generation Mar. 2021 - Jun. 2021

Project for course *Algorithm Design and Analysis*. Work in a group of two and aim to generate the concept description for given medical terms.

Technical Skills

Programming Languages: Python, C/C++, Matlab

Softwares/Platforms/Libraries: PyTorch

Research Tools: LaTex