KAIWEN ZHOU

Zhejiang University, Hangzhou 310058, China

+86-188-8892-7402 | kaiwenzhou111@gmail.com

EDUCATION

Zhejiang University (ZJU)   *B.S. in Statistics*   ***GPA: 3.89/4.00, 88.07/100***   Sep 2017 – Present

- Main courses: *Fundamentals of Data Structure, Natural Language Processing, Object-Oriented Programming, Advanced Algebra, Mathematical Analysis, Probability Theory, Mathematical Statistics, Multi-Variable Statistical Analysis, etc.*

RESEARCH EXPERIENCES

Dialogue summarization with sentence weight evaluation and completeness judgement   Sep 2020 – Present

Research Assistant   Advisor: Prof. Lifu Huang, Virginia Tech

- **Summary generation model**
- Calculate weights of each sentence in dialogue using BERT with a linear layer and a softmax layer.
- Combine sentence weights into BART encoder by multiply the sentence weights with self-attention weights in the last encoder layer.
- Pretrain a completeness discriminator for generated summary using customized training data by randomly deleting sentences from the reference summary.
- Train the full model with the sum of generation loss and completeness loss.
- **Evaluation metric for factual consistency**
- Run OpenIE tool on the generated summary and the reference summary, get the subject-predicate-object tuple set.
- Compute Rouge score or BERTScore of each tuple in the generated tuple set and reference tuple set.
- Compute precision score and recall score by average the generated tuple scores and reference tuple scores.

Differential privacy version of GCN   July 2020 – Aug 2020

Research Assistant   Advisor: Prof. Bo Li, University of Illinois at Urbana-Champaign

- **Design Framework**
- Putted an adjacency matrix ensuring differential privacy into GCN network to keep the training process from using private data and to make it convenient to analyze sensitivity.
- **Privacy mechanism design**
- Proved that using exponential or laplacian mechanism directly on adjacency matrix will result in data inefficiency.
- Generated adjacency matrix from a differential private Hierarchical Agglomerative graph Clustering dendrogram based on MCMC sampling with further reduction of noise scale and edge reconstruction error.
- Designed a new utility function for MCMC dendrogram sampling.
- **Experiment results**
- Improved classification accuracy by 1.5% on the cora dataset using new utility function on baseline privHRG.

Pressure control mechanism design for pressure tubing system   Sep 2019

Research Leader   Advisor: Prof. Zhiyi Tan, Zhejiang University

- **Establishment of mathematical models**
- Fitted the functional relationship between variables using polynomial fitting, trigonometric function fitting and spline interpolation.
- Constructed a set of partial differential equations to describe the relationship between multiple variables in tubing operation under different settings.
- Designed the work mode of two nozzles and pressure reducing value to help increase the time overlap of oil pumping and spraying to the most extent and successfully reduced the variance of the oil pressure
- **Simulation and conclusion**
- Simulated the operation of the system using Euler method and modified Euler method.
- Computed the parameters by dichotomy using the monotone relationship between the parameters and indexes.
- Successfully controlled the pressure in the tubing at any level and significantly reduced the variance of the pressure from 0.53 to 0.026.

ACADEMIC AWARDS

•Hailiang Group First Class Scholarship**(2%)**	Oct 2020
•Zhejiang University Second-class Scholarship**(8%)**	Sep 2020
•Honorable Mention in Mathematical Contest In Modeling	Mar 2020
•First Prize in China Undergraduate Mathematical Contest in Modeling**(0.75%)**	Sep 2019
•Zhejiang Provincial Government Scholarship	Oct 2019
•Zhejiang University Second-class Scholarship**(8%)**	Sep 2019
•Third Prize in Zhejiang Undergraduate Advanced Mathematics (Calculus) Competition	May 2018

SKILLS & LANGUAGES

Computer skills: Python, C/C++, Matlab, R, Stata, SQL

Languages: Chinese (Native), English (Proficient)