Yunjia ZHANG

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EDUCATION

Wuhan University, School of Computer Science **Wuhan, China**

Program: B.Eng. *in Computer Science and Technology* *Expected: Jun. 2019*

- **Overall GPA: 3.92/4.00 (Major GPA: 3.97/4.00)**
- **Rank: 1/164**

PUBLICATIONS

- Third Author, *Inferring Diffusion Networks without Timestamps*, *International Conference on Data Engineering* (ICDE), 06/2018 (Under Review)
- Second Author, *Fast Inference of Diffusion Networks without Infection Temporal Information*, *National Database Conference*, National Data Buoy Center, 05/2018 (Accepted)
- Zhang Yunjia, *Discussions about The Application and Analysis of Computer Network on E-Commerce*, *Digital Communication World*, ISSN 1672-7274CN11-5154/TN, 12/2015

RESEARCH EXPERIENCE

Database System Research Lab, National University of Singapore **Singapore**

Research Assistant (Paid) *Advisor: Prof. Xiaokui XIAO*

- **Research on Propagation Source Detection** *Nov. 2018 – Present*
  - Comprehensive literature review on propagation source detection and focused on multi-source detection
  - Designed a unique neural network structure which is applicable for propagation pattern recognition

Singtel Cognitive and AI Lab for Enterprises, Nanyang Technological University **Singapore**

Research Assistant *Advisor: Prof. Gao CONG*

- **Research on Recommender Systems for Further Education** *Jul. 2018 – Oct. 2018*
  - Detailed literature review on the various state-of-the-art recommender systems focused on job recommender systems and practiced natural language processing techniques such as word embedding
  - Proposed EduLinkedIn - a two-stage word embedding model which could deal with complete cold start to recommend further education positions to candidates
  - Designed a crawler to semi-automatically generate synthetic datasets for preliminary experiments, and implemented word2vec, doc2vec and other basic modules using TensorFlow
  - Examined the first stage - profile similarity-based recommendation, and results showed that the algorithm had an 83% link reconstruction rate
  - Prepared for integration of online recommendation system to verify the real-world performance before drafting a paper

State's Key Lab of Software Engineering, Wuhan University **Wuhan, China**

Research Assistant *Advisor: Prof. Hao HUANG*

- **Research on Reconstruction of Bayesian Network without Temporal Information** *Jan. 2018 - Jun. 2018*
  - Detailed literature review on Influence Maximization and DSet to understand solutions to reconstruct latent Bayesian Networks
  - Established a novel EM-based model to reconstruct the Bayesian Network and theoretically proved its efficiency
  - Conducted experiments which indicated that our algorithm improved more than 20% in accuracy compared with previous works including NetRate, InfoPath etc.
  - Completed paper *Fast Inference of Diffusion Networks without Infection Temporal Information*

- **Research on Latent Diffusion Network Inference Using Convex Optimization** *Oct. 2017 - Jan. 2018*
  - Proposed a convex method using minimum description length and its deductions to reconstruct latent Bayesian network structure
  - Designed an objective function which can be convexly optimized using improved mutual information as one of the parameters
  - Improved the efficiency by 13% and accuracy by 15% of the algorithm and finished paper *Inferring Diffusion Networks without Timestamps*

- **Research on Arbitrarily Shaped Clustering** *Apr. 2017 - Oct. 2017*
  - Implemented algorithms of arbitrarily shaped clustering including ABACUS, DBSCAN etc., realized part of the algorithms and analyzed their validity, extendibility and performance
  - Proposed a novel algorithm for representative point selection method based on even sampling and representative point movement method based on boundary similarity, and verified the correctness of the algorithm in theory
  - Verified the feasibility of the proposed algorithm by experimenting on synthetic and real data sets, and compared it with those previously implemented
  - Performed extensive experiments on synthetic and real data sets containing thousands of nodes
  - Finished the paper entitled *An Efficient Method for Arbitrary Shaped Clustering Based on Representatives Sampling and Boundary Similarity*

Institute of Software, Chinese Academy of Sciences **Beijing, China**

Research Assistant *Advisor: Prof. Limin GUO*

- **Research on Efficient Location-based Searching Algorithm** *Jul. 2017 - Aug. 2017*
  - Investigated algorithms used in range-query and k nearest neighbors (kNN) searching, and performed them to deal with million data volume
  - Developed a grid-based algorithm, which can accelerate the range-query searching procedure by 22%
  - Designed an algorithm aiming at searching k nearest neighbors (kNN) using improved heap theory and proved its efficiency under bulk requests of nearest-query

Honors & Awards

- **Meritorious Winner** for MCM/ICM (awarded for top 9%) *Feb.2018*
- **Second-Class Scholarship (awarded for top 5%)** of Wuhan University for three consecutive years *Sep.2015-Jul. 2018*
- **Merit Student (awarded for top 4%)** of Wuhan University for three consecutive academic years *Sep.2015-Jul. 2018*
- Third Prize for College Student Internet+ Innovation and Entrepreneurship Competition (awarded for top 10%) *Dec. 2017*
- Excellent Deputy President of Student Union within the School of Computer (awarded for top 13%) *Apr.2017*
- First Prize for the Wuhan University Winter Social Practice (awarded for top 3%) *Mar.2016*

Projects & Course Designs

- **Crowd-sourcing service platform**: developed an Android platform to provide crowd-sourcing service, using the Client-Server mode
- **Patent information analyzing platform**: built a platform for searching and analyzing patent information using Java and PHP
- **GIS prototype system using Qgis developing API**: constructed a GIS prototype system providing basic functions of map controlling with C++ and QT
- **3D model displaying and controlling software**: constructed a 3D model displaying and controlling software providing functions like 3D picking with C++ and OpenGL
- **Multi-terminal gymnastic management system**: designed a system architecture based on the MVC design pattern and implemented server application using LARAVEL framework
- **C-compiler**: constructed a C-compiler for syntax and grammar checking, and implemented intermediate code generation with the help of FLEX and BISON
- **Embedded intelligent monitoring system**: constructed an embedded system on raspberry pi for intelligent home monitoring with facial recognition, remote warning and gesture control
- **Multi-cycle pipelined CPU hardware simulation**: designed a five-level pipelined multi-cycle CPU using hardware description language Verilog HDL, which is able to execute MIPS assembly code
- **Real time express information reminder**: built a real time express information reminder on mobile devices by extracting online information using java and python crawlers
- **Hardware implementation of Tetris game**: realized the pure hardware implementation of Tetris game based on the FPGA developing platform with LCD display
- **Rare Category Detection:** learned and implemented some Rare Category Detection algorithms, such as INTERLEAVE, NNDM, etc. and tested and compared the performance of each algorithm on synthetic and real data sets

Programming Skills

- **Languages**: C/C++, Java, SQL, MATLAB, Python, Verilog HDL, PHP, HTML
- **IDEs & Environments**: CLion, PhpStorm, PyCharm, Visual Studio, QT Creator, IntelliJ IDEA, Eclipse, Windows, Linux