Dake **Zhang**

Natural Language Processing · Data Mining · Software Engineering

Student Dorm C4, Wuhan University, Wuhan, Hubei, China

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"Behind every beautiful thing, there's some kind of pain."

Education

School of Computer Science, Wuhan University (WHU) — *Wuhan, China*

Bachelor of Engineering in Software Engineering — *Sept. 2016 - June 2020 (Exp.)*

- Overall GPA: 3.85/4.0, top 10% out of 297 students
- Major courses: Software Engineering, Compiler Technology and Application, Advanced Mathematics, Data Structures and Algorithms, Computer Organization and Architecture, Object-oriented Programming, System-Level Programming, Database Systems, Principles of Operating Systems, Networking and Distributed Computing

Academic Projects

Visualization of Student's Activities in Online Courses, University of Alberta — *Edmonton, Canada*

Mitacs Globalink Intern supervised by Dr. Carrie Demmans Epp — *June 2019 - Sept. 2019*

- Funded by China Scholarship Council (CSC) and Mitacs Canada.
- Improved PHP-based Online Course Website in terms of principles of Human Computer Interaction.
- Used Extractive Summarization from NLP and BERT to automatically select topic sentences of posts and replies in the online forum.

Early Warning System for Stock Market using Topological Data Analysis, Wuhan University — *Wuhan, China*

Undergraduate Research Assistant supervised by Dr. Bo Han and Dr. Ting Hu — *Nov. 2018 - May 2019*

- Converted one-dimensional time series into time-ordered series of point clouds based on Taken's Embedding Theorem.
- Used Persistent Homology in TDA to analyze the shape changes through the time-ordered point clouds.
- Proved this method is sensitive when the regime is entering a chaotic state using Chaotic Time Series.
- Proposed dynamic window size to reduce the computing complexity and accelerate the algorithm.
- Successfully predicted Chinese stock market crashes both in 2008 and in 2015 two months ahead, based on Chinese stock market data from 2006.

CodeJudger - a LeetCode-like Online Platform for Practicing Coding, Wuhan University — *Wuhan, China*

Course Project of Software Engineering — *Mar. 2019 - May 2019*

- Designed the website and business logic.
- Used SSM (Spring+SpringMVC+MyBatis) framework to develop the back end.
- Developed user login and registration, user information visualization (pie chart and heatmap), code submission and feedback.
- Followed the principles of Software Engineering, such as high cohesion, low coupling and systematic security.
- Used Agile Development (6 group meetings) on Teambition, cooperated on Github (53 submissions), realized 19 requirements and fixed 7 product defects.

Causal Discovery on Time Series, Wuhan University — *Wuhan, China*

Undergraduate Research Assistant supervised by Dr. Bo Han — *July 2018 - Aug. 2018*

- Used CUTE (Causal Inference on Event Sequences) to do Causal Discovery based on economic data of Canada.
- Compared different Causal Discovery Algorithms like traditional Granger Causality Test.
- Proved CUTE performed better in long sequences with strong noise without the need to set lag parameter manually.
- Found there was a two-way causal relationship between GDP and New Housing Price Index, and between GDP and Consumer Price Index. Found there was a one-way causal relationship from Unemployment Rate to GDP and one from GDP to Retail Sales.

Social & Extracurricular Activities

Art Department of Students' Union in School of Computer Science — *Wuhan, China*

Vice President — *Sept. 2016 - June 2018*

- Collaborated with other departments to organize activities, such as the Welcome Party for Freshmen and Song Competition.
- Made activity plans, assigned tasks and coordinated team members.
- Managed the official social media account of Art Department.
- In charge of the rehearsal of Snail Chorus during the Golden Autumn Festival Choir Competition at Wuhan University.

Honors & Awards

Academic

2019	**Globalink Internship Scholarship**, China Scholarship Council & Mitacs	*Beijing, China*
2018	**2nd Scholarship of Outstanding Student**, Wuhan University (TOP 15%)	*Wuhan, China*
2017, 2019	**Scholarship of Exemplary Student**, Wuhan University (TOP 30%)	*Wuhan, China*
2017, 2018, 2019	**Honorable Title of Outstanding Student**, Wuhan University (TOP 30%)	*Wuhan, China*

Non-academic

2018	**Outstanding Social Practice Project in Winter Vacation**, Wuhan University	*Wuhan, China*
2017, 2018	**Honorable Title of Active Participant in Social Activities**, Wuhan University	*Wuhan, China*

Skills

Programming	**Python**, **Java**, R, C/C++, JavaScript, PHP, C#
Technology	Git, Pytorch, Linux, Machine Learning, Data Mining (Time Series), Natural Language Processing (Text Generation)
Languages	Chinese, English (TOEFL 105/120, GRE 332/340)