Ling Zhou

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SUMMARY

I am a mathematician working on topological data analysis, with strong problem-solving and communication skills. With the goal to explore and extract the shape of data, my previous research focuses on developing abstract mathematical tools from various branches of pure math to analyze data. Recently, I have been interested in working on real-world datasets, and thus I want to start looking for opportunities in industry to continue my passion of data analysis in a more applied manner.

SKILLS

- **Languages & Platforms:** Python, Jupyter Notebook, Latex, C++ (basic)
- **Python Libraries:** NumPy, Pandas, BeautifulSoup, Scikit-learn, Seaborn, Matplotlib, Ripser
- **Machine Learning:** regression, classification, clustering
- **Quantitative:** Statistics and probability, data analysis
- **Research:** 2x journal paper published, 3x talks given and 2x talks scheduled, 1x paper referred, 1x conference co-organized, 2 years of organizing weekly research group meetings
- **Language**: Mandarin (native), English, Cantonese

SELECTED PROJECTS

Steaming-Hot - Erdős Institute's Bootcamp | ***Python: BeautifulSoup, Scikit-learn, Pandas*** May 2021

Built various models to classify, predict and do survival analysis of Steam games and user data

- Scrapped monthly time series data over the past 10 years of 10k+games
- Exploratory data analysis for 70k+ features of 57k+ games, using scatter matrix and histograms
- Built a model to find similarity of the trends of different games, to provide advice for game developers

Are you Van Gogh's - Erdős Institute's Bootcamp | ***Python: Ripser, Pandas*** May 2020

Built a model to determine if a painting is in Van Gogh's style or not.

- Applied topological data analysis tool to study the brush strokes of the digitalization of the paintings

PROFESSIONAL EXPERIENCE

Graduate Research and Teaching Assistant Aug 2021 – now

The Ohio State University, Columbus, OH

- Constructed invariants for extracting topological and geometrical information from data. [ArXiv]
- Developed a poly-time algorithm to compute some of these invariants. [ArXiv]
- Showed that neural networks with certain activation functions can be trained in a reduced parameter space. [Journal]

Graduate Research and Teaching Assistant Aug 2015 - Jul 2017

Hong Kong University of Science and Technology, Hong Kong

- Constructed generalized Fourier transforms associated with the oscillator representation. [Journal]

LEADERSHIP

Network Data Analysis Group 2020 – now

Event organizer and manager of the website of this research group. Organized weekly group meeting and monthly joint seminar with another research group from Colorado State University.

Topology, Geometry and Applications Graduate Student Organization Mar 2020- now

Co-president. Assisted in organizing graduate student seminars.

First Midwest Graduate Student Conference: Geometry and Topology meet Data Analysis and Machine Learning, Jun 1st-2nd, 2019

Co-organizer. Co-organized a conference of 80+ graduate students and faculties from 20+ universities and companies.

SELECTED CERTIFICATES

Erdős Data Science Bootcamp, May 2020 & May 2021: data gathering, exploratory data analysis, classification, regression and time series analysis.

EDUCATION

Doctorate of Philosophy | ***Mathematics,*** *GPA 4.0/4.0* Aug 2017 - now

The Ohio State University *Columbus, OH*

Master of Philosophy | ***Mathematics,*** *GPA 4.0/4.3* Aug 2015 - Jul 2017

Hong Kong University of Science and Technology *Hong Kong*

Bachelor of Science | ***Mathematics*** **and Applied Mathematics,** *GPA 3.86/4.0* Aug 2010 - Jul 2015

Sichuan University, Chengdu, Sichuan *China*