Fengyuan Liu

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Education Background

University of Oxford, Oxford, England 10/2022-10/2023 (expected)

- M.Sc. Advanced Computer Science
- Topics Covered: Graph Representation Learning, Computational Biology, Deep Learning in Healthcare

University of Washington, Seattle, WA 09/2017-12/2020

- B.Sc. in Computer Science
- B.Sc. in Applied Computational Mathematical Science (Data Science & Statistics)
- Magna Cum Laude with GPA: 3.95/4.0 (around top 0.5%) and Dean's List: 10/10 full quarters
- Topics Covered: ML, DL, RL, NLP, Stochastic Process, Cryptography

Publications

[1] **OpenFE: Automated Feature Generation beyond Expert-level Performance**
Tianping Zhang, Zheyu Zhang, Zhiyuan Fan, Haoyan Luo, **Fengyuan Liu**, Qian Liu, Wei Cao, Jian Li
International Conference on Machine Learning ***(ICML)***, 2023 (under review)

[2] **The Principle and Applications of Random Walks in Various Disciplines**
Fengyuan Liu
International Conference on Applied Mathematics, Modeling and Intelligent Computing ***(CAMMIC)***, 2022

Research Experience

Institute for Interdisciplinary Information Sciences, Tsinghua University Beijing, China
Research Intern, ADL Group, under the supervision of Prof. Jian Li 05/2022–10/2022

Automatic Feature Generation

- Used GBDT to design a model called OpenFE to quickly and accurately measure the validity of new features
- Reproduced AutoCross, AutoFeat, SAFE and FCTree methods and compared them with OpenFE
- Did experiments and compared the prediction results with various kinds of databases [1]

Smart beta based on multi-factor models

- Pre-processed raw factors in the tabular form about all stocks listed on the Shanghai and Shenzhen stock markets from 2017 to present
- Dealt with factors by filtering stocks, excluding extreme values, filling null values, doing industry neutral, and standardizing.
- Mainly employed Lightgbm to train and compare the prediction results with different labels (pct1, pct2, or pct5) with various factors combination
- Wrote a script to run once per day to forecast and prepare for practical application

The University of California, Berkeley Berkeley, CA
Research Intern under the supervision of Prof. F. Alberto Grunbaum 09/2021-01/2022

The Principle and Applications of Random Walks in Various Disciplines

- Researched on random walks in dimensions 1, 2 and 3 to verify that the random walk in each dimension was recurrent or transient
- Studied the applications of random walks in Economics, Physics and Biology
- Published a single-author paper entitled The Principle and Applications of Random Walks in Various Disciplines [2]

University of Washington Seattle, WA
Independent Researcher, Course Related Research 08/2020-12/2020

Propaganda Detection Using BERT

- Tokenized the texts from the dataset using a BERT tokenizer; optimized the BERT model by adding connected layers and applying different learning rates, weight decays and epochs.
- Ran different models until the validation loss stopped increasing; verified the accuracy with a test set.
- Compared the performances of BERT fine-tuned model and Naïve Bayes model in detecting articles with propagandistic content.

Complex Network (Small-world Network)

- Introduced clustering coefficient and average path length which demonstrated the small-world effect.
- Compared the Watts-Strogatz model and Newman-Watts model by coding and graphing.
- Built a small-world network model stimulating the relationships between students based on Python.

University of Washington Seattle, WA

Undergraduate Researcher, Washington Experimental Mathematics Lab 01/2020-03/2020

Triply Periodic Polyhedral Surfaces

- Studied the Octa-4{3, 8|3}, Octa-8{3, 12|3} and Cube-6{4, 6|4} triply periodic surfaces
- Constructed a new triply periodic polyhedral surface made out of triangles, 12 meeting at each vertex by finding a hyperbolic representation of such a surface using hyperbolic triangles
- Determined the genus of the surface obtained after identifying appropriate pairs of faces
- Advisor: *Dr. Charles Camacho* and *Dr. Dami Lee*

Industry Experience

Morgan Stanley

Part-time Assistant (PTA) of the Investment Analysis Project 01/2020-02/2020

- Analyzed the financial data in the annual and semi-annual reports of ION Geophysical Corporation
- Applied the Altman Z Score and SWOT model to analyze the basic situation, bankruptcy probability and acquisition risks & opportunities of the company

China Telecom Co., Ltd Nantong, China

Intern at the IT Department 06/2018-09/2018

- Familiarized with the channel-based system positioning, business-based system positioning and customer-based system positioning of the BSS system
- Collected, analyzed and reported customer information through development tools including SQL language and Microsoft Visual Studio

Leadership & Volunteer Experience

SEA Academy

Honor Scholar of Mathematical Studies & Computer Science department 09/2022-Present

- Guided more teenagers to launch research, help them explore their interests and improve the society.

Frameworld Media Organization

Post-production Officer 05/2018-10/2019

- Worked in teams to produce videos and edited pictures using Premiere Pro, After Effect, and Photoshop

Society of Women Engineers

Member 04/2018-10/2019

- Promoted the diversification of scientific and technological talents, especially women in high-tech fields

Skills & Hobbies

Professional Qualification:

CFA Exam Level I (August 2021): Pass

Computer Skills:

Java, Python, C#, SQL, Java Script, MATLAB, R, LaTeX

Hobbies:

Piano, Swimming, Ancient Chinese Philosophy, Jeet Kune Do