Fengyuan Liu

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Education Background

University of Oxford, Oxford, England 10/2022-9/2023

- M.Sc. Advanced Computer Science
- Topics Covered: Geometric Deep Learning, Quantum Computation, 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

Ongoing

[2] **An Image is worth 1000 lies: Adversarial Transferability Across Prompts on Vision-Language Models**
Haochen Luo*, **Fengyuan Liu***, Jindong Gu, Philip Torr
International Conference on Learning Representations ***(ICLR)***, 2024 (under review)

[3] **DrugGPT: A Knowledge-Grounded Collaborative Large Language Model for Faithful and Evidence-based Drug Analysis**
Hongjian Zhou*, Fenglin Liu*, Wenjun Zhang, Guowei Huang, Lei Clifton, David Eyre, Haochen Luo, **Fengyuan Liu**, Kim Branson, Patrick Schwab, Xian Wu, Yefeng Zheng, Anshul Thakur, and David A. Clifton
Nature Biomedical Engineering, 2024 (under review)

[4] **Few-shot Model-specific Generated Image Detection**
Fengyuan Liu, Haochen Luo, Jindong Gu, Philip Torr

Research Experience

Department of Engineering Science, University of Oxford Oxford, United Kindom
Research Intern, TVG, under the supervision of Prof. Philip Torr and Dr. Jindong Gu 05/2023–present

Few-shot Model-specific Generated Image Detection

- Introduce a seminal investigation into ascertaining the provenance of images generated by specific models;
- Propose a novel technological solution that adds to the burgeoning toolkit for addressing intellectual property concerns in the domain of generative models
- An enhanced algorithmic approach is presented to augment the performance and reliability of the detection model
- A comprehensive dataset is provided, encompassing 283,528 images, inclusive of synthetic images produced by six distinct generative models. [4]

An Image is worth 1000 lies

- Introduce cross-prompt adversarial transferability, an important perspective of adversarial transferability, contributing to the existing body of knowledge on VLMs' vulnerabilities.

- Propose a novel algorithm Cross-Prompt Attack (CroPA), designed to enhance cross-prompt adversarial transferability.
- Extensive experiments are conducted to verify the effectiveness of our approach on various VLMs and tasks. Moreover, we provide further analysis to understand our approach. [2]

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

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 09/2022-09/2023

- 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