

YUFAN (BRUCE) ZHANG

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EDUCATION

Duke Kunshan University (DKU) / Duke University Dual Degree

Aug 2019 – May 2023

B.S. in Data Science (by DKU)

Kunshan, China

B.S. in Interdisciplinary Studies (Subplan: Data Science, by Duke)

- Cumulative GPA: 3.76/4.0 | Major GPA: 3.91/4.0
- Selected as Teaching Assistant for COMPSCI 201 (Data Structures) and ECON 101 (Economic Principles)
- Dean's List: Spring 2021, Spring 2022 (with Distinction)
- Courses: Machine Learning, Data Visualization, Algorithms and Databases, Programming and Data Structures, Cloud Computing, Computer Organization, Discrete Math, Calculus, Linear Algebra, Probability and Statistics

RESEARCH EXPERIENCE

Blockchain Network Analysis, SciEcon CIC (an NPO registered at the UK)

Aug 2022 – Nov 2022

Supervisors: Prof. Luyao Zhang (Asst. Prof. of Economics) and Dr. Yulin Liu (Chief Scientist, SciEcon CIC)

- Performed statistical analysis and social network analysis (core-periphery structure analysis) on over 2 million transaction records of 6 popular DeFi protocols, which provides a framework to compare DeFi's levels of decentralization cross-sectionally
- Built and streamlined the data pipeline to query and process transaction records from the Ethereum blockchain with Google BigQuery, achieving a 200× speedup by using the BigQuery SQL and simplified the network analysis workflow
- Publication: **Zhang, Y.**, Chen, Z., Sun, Y., Liu, Y., & Zhang, L. (2022). Blockchain Network Analysis: A Comparative Studies of Decentralized Banks. [Accepted to SAI Computing Conference 2023]

GAN-based Few-shot Stylized Multilingual Font Generation, DKU

Jan 2022 – Jul 2022

Supervisor: Prof. Peng Sun (Asst. Prof. of Data Science)

- Built a end-to-end GAN-based model with PyTorch to achieve arbitrary font style transfer in a few-shot learning fashion, improving the generating images quality by 22% of SSIM and 19% of user evaluation scores compared to the state-of-the-art method
- Designed a novel skip connection to improve the generating ability of letters from untrained languages by 25% of SSIM
- Publication: **Zhang, Y.**, Man, J., & Sun, P. (2022). MF-Net: A Novel Few-Shot Stylized Multilingual Font Generation Method. *Proceedings of the 30th ACM International Conference on Multimedia*. doi:10.1145/3503161.3548414

Visualizing Non-Fungible Token Ethics, Data Science Research Center at DKU

Mar 2022 – Sep 2022

Supervisors: Prof. Xin Tong (Asst. Prof. of Computation and Design) and Prof. Luyao Zhang (Asst. Prof. of Economics)

- Created a dashboard leveraging Plotly Dash to visualize the price difference of CryptoPunks with different genders and skin tones
- Performed SQL to query 16k+ transaction records and architected a database of CryptoPunks NFT using MySQL
- Conducted data analysis (distribution analysis, sentiment analysis) with Python on 13+ million tweets on NFT's ethical issues
- Publication: **Zhang, Y.**, Chen, Z., Zhang, L., & Tong, X. (2022). Visualizing Non-Fungible Token Ethics: A Case Study On CryptoPunks. *ChinaVis 2022*. doi:10.48550/arXiv.2206.12922

Using AlphaFold and GNN to Predict Catalytic Efficiency, DKU

Sep 2021 – Jun 2022

Supervisor: Prof. Huansheng Cao (Asst. Prof. of Environmental Science)

- Developed a Graph Convolution Network (GCN)-based model using PyTorch to predict catalytic turnover numbers in *Bacillus subtilis* with the intermediate outputs from AlphaFold, which achieved an increase in R^2 of 14% than the state-of-the-art model
- Conducted dimensionality reduction of 1.7TB of output data from AlphaFold by implementing Principle Component Analysis (PCA)

CycleGAN-based Image Domain Transfer, Chinese Academy of Sciences

Jul 2021 – Aug 2021

Supervisor: Prof. Shuhui Wang (Assoc. Prof. with Institute of Computing Technology, Chinese Academy of Sciences)

- Enhanced CycleGAN's robustness of the precision of the generating images by 67% by developing a new category loss with PyTorch
- Conducted literature review on the state-of-the-art image domain transfer methods and datasets and outputs a technical report

PUBLICATIONS & CONFERENCES

MF-Net: A Novel Few-Shot Stylized Multilingual Font Generation Method

ACM Multimedia 2022

Yufan Zhang, Junkai Man, Peng Sun

DOI: 10.1145/3503161.3548414

Visualizing Non-Fungible Token Ethics: A Case Study On CryptoPunks

ChinaVis 2022

Yufan Zhang, Zichao Chen, Luyao Zhang, Tong Xin

DOI: 10.48550/arXiv.2206.12922

Blockchain Network Analysis: A Comparative Studies of Decentralized Banks

SAI Computing Conference 2023

Yufan Zhang, Zichao Chen, Yutong Sun, Yulin Liu, Luyao Zhang

Accepted

SKILLS

- **Programming Skills:** Python, Java, SQL, C++, MATLAB, Markdown, \LaTeX
- **Machine Learning & Data Science:** PyTorch, Scikit-Learn, XGBoost, MySQL, PostgreSQL, Hadoop, Spark, Pandas, Numpy
- **Software & Web Development:** JavaScript, HTML, CSS, Flask, Django, Vue.js, BootStrap
- **Miscellaneous Technologies:** Data scraping, Data visualization (D3.js, Plotly), Linux, Git, Conda, Slurm, Docker, ArgoCD

PROFESSIONAL EXPERIENCE

Saint Laurent Consulting (on Amazon.com account)

Sep 2022 – Nov 2022

Business Intelligence Engineer Intern

- Built an end-to-end data solution of data transformation (RESTful APIs and Python-based ETL) and backend database (PostgreSQL)
- Automated daily process to fetch daily COVID-19 data from CDC and calculate the risk exposure of all Amazon fulfillment centers
- Integrated an order tracking web application with an existing inventory management system with Flask and MySQL

SciEcon CIC (an NPO registered at the UK)

Oct 2021 – Present

Chair of Creativity and Innovation

- Built static websites leveraging Bootstrap and MkDocs and deployed the websites on Inter Planetary File System (IPFS)
- Developed and executed brand communication strategy across all platforms (digital multimedia, branding materials)
- Organized the SciEcon Lab Incubator Programs with 30+ student participants working on the exploratory research projects

CompSci 201 Teaching Team, DKU

Jan 2021 – Mar 2021

Teaching Assistant

- Lectured 120 min-lab sessions covering the data types and arrays and hold office hours to troubleshoot bugs in 30+ students' programs
- Developed 5 Java programming exercises in the online judge system covering topics of object-oriented programming and data structures

Office of China Enrollment Management, DKU

Sep 2020 – Jun 2021

Student Assistant

- Utilized Python and Excel to document, clean, and analyze graduation results from 80+ high schools in China
- Arranged campus tours and enrollment information sessions for 50+ Chinese visitors

SELECTED PROJECTS

COVID-19×Twitter | *Twitter Sentiment Analysis on COVID-19 Related Topics*

Spring 2022

- Used PySpark to evaluate the extent that verified users have benefited from the pandemic to increase their number of followers
- Designed and implemented an information retrieval and classification system for sentiment analysis on Twitter

Higher Education Evaluator | *Evaluating Higher Education Levels with Machine Learning*

Spring 2021

- Built a higher education level classifier based on Back Propagation Neuro Network and Particle Swarm Optimization with Python
- Analyzed the sensitivity and stability of the model and demonstrated the overlap between the results and the real results was 85.71%

LEADERSHIP & SERVICE

DKU Home | *Co-Chair of DKU Home (Kunshan High-Tech Zone)*

Aug 2020 – Dec 2020

- Scheduled and orchestrated weekly volunteering activities with another co-chair
- Hired weekly volunteers for volunteering activities at DKU Home (High-Tech Zone)

Crazy Chinese Club, DKU | *Co-Founder & Marketing Chair*

Sep 2019 – Sep 2020

- Co-founded and operated the Crazy Chinese club with 300+ students joining that helps international students from 20+ countries learn Mandarin and experience Chinese culture
- Managed branding of Crazy Chinese to promote club activities by designing related materials (e.g., posters)

Student Media Center, DKU | *Member of the Creative Design Committee*

Sep 2019 – Sep 2020

- Participated in the co-branding between Duke Kunshan University and Suzhou Museum
- Assisted to edit the 2020 Duke Kunshan University orientation welcome videos

ADDITIONAL INFORMATION

Languages: English (TOEFL iBT 110, GRE 326+3.5), Mandarin Chinese (native)

Honors and Awards:

- Meritorious Winner (MCM/ICM Contest in Modeling 2021)
- Silver Medal (iGEM 2021)
- Top 100 Team Mainland China (L'Oréal 2021 Brandstorm)

Interests: tech, photography, digital arts, ultimate frisbee