

Education

- University at Buffalo** Buffalo, NY
Ph.D in Computer science and engineering Aug 2024
- University at Buffalo** Buffalo, NY
Master of Science (Research Track) - Computer science and engineering Aug 2023 - May 2024
- University at Buffalo** Buffalo, NY
Master of Science - Econometrics And Quantitative Economics Jan 2021 - Jun 2022
- University at Buffalo** Buffalo, NY
Bachelor of Arts - Economics Aug 2017 - Dec 2020

Publication

- Mingzhen Huang, Shan Jia, Zhou Zhou, Yan Ju, **Jialing Cai**, Siwei Lyu, "EXPOSING TEXT-IMAGE INCONSISTENCY USING DIFFUSION MODELS", submitted to Conference on International Conference on Learning Representations (ICLR)
- Yan Ju, Shan Jia, **Jialing Cai**, Haiying Guan, and Siwei Lyu, "GLFF: Global and Local Feature Fusion for Face Forgery Detection", submitted to IEEE Transactions on Multimedia (TMM)
- Shan Jia, Mingzhen Huang, Zhou Zhou, Yan Ju, **Jialing Cai**, Siwei Lyu, "AutoSplice: A Text-prompt Manipulated Image Dataset for Media Forensics", Conference on Computer Vision and Pattern Recognition Workshop (CVPRW)

Experiences

- UB Media Forensic Laboratory, University at Buffalo** Buffalo, NY
Research Project Assistant, advised by Prof. Siwei Lyu May 2022 - Current
 - Focus on Deepfake image generation and detection, with work published in the IEEE Transactions on Multimedia (TMM).
 - Participate in creating two subsets of a new Deepfake dataset termed DeepFakeFaceForensic (DF³): (1) face blending, which replaces faces in real-world pictures with synthetic faces; (2) multi-image compression, which applies video compression algorithms onto Deepfake image sequences.
 - Reimplement the previous Deepfake detection method SimSwap on the new DF³ dataset.
 - Participate in testing the performance changes of existing Deepfake detectors on compressed image/video.
 - Generated AI-synthesized images for a novel dataset, which was a key component of research accepted and published in the CVPR 2023 workshop
- KIRUNIVERSE** Remote
Community Growth Intern Jul 2019 - Dec 2019
 - Perform data analysis on weekly reports that outline progress against KPI objectives.
 - Revamp plans to enhance the company's capability of maintaining and recovering critical business functions.
 - Track the engagement of social networks to identify high-performing ideas for campaigns.

Projects

- Investment Project: All Equity Portfolio** (project management, financial analysis, asset evaluation)
 - Select at least 40 companies from the S&P 500 index and place trades daily.
 - Build an equity portfolio on the virtual trading platform and manage as a professional investment manager.
 - Rational analysis and allocation of various securities, including shareholdings, bonds and real estate to meet specified investment goals.
 - Make a financial statement to report the portfolio's revenues and costs, as well as its cash flows from operating, investing, and financing activities.
- Breast Cancer Detection** (Python, machine learning, image classification)
 - Data cleaning and preprocessing, including dimension reduction, and normalization.
 - Build several classification models (*e.g.*, random forest, decision tree and logistic regression), and tune the parameters with grid search.
 - Achieve a 96.5% accuracy, with results visualization (*e.g.*, feature correlation, ROC curve and confusion matrix).
- Machine Learning-Based Web App for Diabetes Detection** (Python, machine learning, web app)
 - Develop a random forest classification model for binary classification, achieving an accuracy of 78.6%.
 - Develop a web application to achieve virtual diabetes diagnosis.

Skills Summary

- **Languages:** Python, JAVA, JavaScript, C++, Matlab, HTML
- **Python Libraries:** Pandas, Scikit-learn, Numpy, Matplotlib, Seaborn, Tensorflow, streamlit
- **Skills:** Probability and Statistics, Econometrics, Statistical analysis and Data visualization
- **CS Courses:** Data Structure and Algorithm, Artificial Intelligence, Discrete Math, Computer Organization, C++