WEICONG LIU

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EDUCATION

University of Pennsylvania | **Philadelphia, United States** | **M.S. in System Engineering**   09/2023 – 06/2025

- Course concentration in **Data Science**, achieved an A grade in all of courses.
- Related Course: Principles of **Deep Learning**, **Applied Machine Learning & Reinforcement Learning**, Statistics for **Data Science**, Learning in **Robotics**.

University of Nottingham | **Ningbo, China** | **BSc Honors in Mathematics**   09/2019 – 06/2023

- Second-Class division one honors degree with **Applied Mathematics** concentration.
- Studied Abroad in United Kingdom for the full 2021-2022 Academic Year
- Related Course: **Machine Learning**, **Linear** Mathematics, Advanced **Statistic**, Advanced **Probability**, Advanced Calculus, **Numerical Analysis**, **Optimization**, Differential equation.

RESEARCH

Freddie Mac Loan Default Prediction with Machine Learning | **Beijing Normal Univ.**   06/2022 – 08/2022

- Processed a dataset that contains single-family mortgage loans data between 2007 and 2010 (around 20G), utilized Random Under Re-Sampling and Random Over Re-Sampling to cope with an imbalanced dataset.
- Deployed seven machine learning algorithms including **Gradient Boosting Decision tree**, **AdaBoost**, **XGBoost**, **LightGBM**, and Multilayer Perceptron with open-source libraries to provide insight into how individual loan and borrower information affect the loan default.

Intelligent Stock Analysis Based on Machine Learning | **University of Nottingham**   06/2021 – 08/2021

- Adopted the historical data of specific stocks in the experimental duration as experimental dataset, trained prediction models that forecasts stock price movement within the predefined prediction durations.
- Combined return prediction in portfolio formation with machine learning models such as Implemented Random Forest, Mean-Variance with Forecasting Model, and **LSTM** implemented with **Python scikit-learn and TensorFlow**.

Image Description AI | **University of Pennsylvania**   11/2023 – 12/2023

- Developed an AI system using **CNNs** and **Transformers** for interpreting images and generating accurate textual descriptions, demonstrating potential applications in aiding the visually impaired and enhancing recommendation systems.
- Applied advanced preprocessing (**EfficientNetB0** and **Word2Vec**) for both visual and textual data.
- Demonstrated the model's real-world utility in vividly describing image contents in various test scenarios.

EXPERIENCE

Beijing PsychTech Technology Co., Ltd. | **Beijing, China** | **Data Analytics Intern**   07/2021 – 09/2021

- Conducted data analytics on DEAP (a dataset for emotion analysis using electroencephalogram, physiological and video signals) to uncover and extract the data features of certain emotional stimulations.
- Utilized the 17-item Hamilton Depression Rating Scale (HDRS-17) and tailored a machine learning model with behavioral and physiological features data retrieved from wearable devices to evaluate depressive symptoms severity for Major Depressive Disorder (MDD) patients.

SKILLS

Techniques: Microsoft Excel (Built-in python functionality, functions), Python (PyTorch, OpenCV, Yolo, Transformers, Scrapy, NumPy, Pandas, Matplotlib, SciPy, scikit-learn, TensorFlow, Keras), Java (WEB development), SQL, C++, R, Matlab, LaTeX.

Languages: English (Proficient), Chinese (Native)

Skills: Machine Learning & Deep Learning, Principle of Neural Networks (CNN, RNN, LSTM, Transformer), Computer Version, Web Crawling, Database Management, Full-stock Development (Java, Vue, SpringBoot, MySQL), Statistics.