XINYI (TRACY) LIU

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EDUCATION

Columbia University New York, NY
Master of Science in Data Science, 4.2/4.0 Expected Apr 2022

Nanjing University of Posts and Telecommunications (NJUPT) Nanjing, CN
Bachelor of Engineering in Communication Engineering, 3.95/5.0, 1st Rank, Honorary Graduate Jul 2019

PROJECT EXPERIENCE

COLUMBIA: New York City Employment Analysis, *Team Leader* Oct 2020 - Jan 2021

- Collected data from United States Census, mined data and analyzed patterns of missing values with pandas and R.
- Visualized data based on R and analyzed the rules based on visualizations.
- Realized the interactive visualization component based on d3.
- Built an R bookdown book for this project. Link: https://tracy3057.github.io/NYC_Employment_Analysis_Book/
- Selected in DSI Best Student Project Competition Finalist. Link: https://www.youtube.com/watch?v=9nRL7f8gijo

NJUPT: Low-resolution Analog-to-Digital Converters (ADCs) for Two-hop Massive MIMO Relay System under Rician Channel, *Team Member* Oct 2020 - Mar 2021

- Converted one-hop Rayleigh system to two-hop Rician system and increased the sum achievable rate by 245.5%.
- Applied low-resolution ADCs instead of high-resolution ADCs to improved the energy efficiency by 150%.
- Accomplished a research manuscript for this project.

NJUPT: Clustering Algorithm in Wireless Sensor Networks (WSN) Based on DE, *Team Leader* Dec 2018 - Jun 2019

- Analyzed three AI Algorithms with 2 team members based simulation results and selected Differential Evolution Algorithm (DE) to establish the model.
- Combined algorithms of Simulated Annealing Algorithm (SA) and Chaos Optimization Algorithm (COA) with DE and improved DE by delaying the cluster-head death emergence for 1550 iteration times.
- Designed new methods of "cluster-head swift" and "partition communication" and reduced 71.4% energy consumption.
- Published an EI paper: *Clustering Algorithm in Wireless Sensor Networks Based on Differential Evolution Algorithm.*

NJUPT: Research on Brazil's Fragility and Climate Change with Artificial Neural Network (ANN) Dec 2017 - Jan 2018

- Advanced our feature extraction by subdividing fragility into environmental, social, economic, military and political fragility and using Analytic Hierarchy Process (AHP) to determine weights of the five components.
- Implemented Fuzzy Comprehensive Evaluation (FCE) to build a measurement system.
- Employed ANN to research on environmental index, which is the one with greatest variation in given period.
- Used Support Vector Regression (SVR) to predict the tipping point and applied Grid Search to optimize SVR's penalty factor with Python.

WORK EXPERIENCE

NJUPT: Teaching Assistant in Circuit Analysis Jan 2019 - Jun 2019

- Organized and led group discussions for 26 students once two weeks after designing with professor.
- Corrected students' homework and set up Q&A sessions to answer common questions.

SKILLS

Programming	Python, R, SQL, MATLAB
Python Packages	Numpy, Pandas, Scikit-Learn
Cloud Services	GCP, AWS
Data Visualization	Matplotlib, ggplot2, Tableau, Echarts, d3
Other	LaTex, Flask