Chong-Yang Shi

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EDUCATION

Southern University of Science and Technology (SUSTech), College of Science - *Major GPA: 3.78/4.00* Shenzhen, Guangdong
Major: Bachelor of Science, Statistics Supervisor: Siu-Hung CHEUNG, Bing-Yi JING Expected Graduation: 08/2022

Honors/Awards:

2021 Mathematical Contest in Modeling (Honorable Mention)

2020 Contemporary Undergraduate Mathematical Contest (Third Prize of Guangdong Province)

2020 Contemporary Undergraduate Mathematical Contest in Modeling (Third Prize of Guangdong Province)

Scholarships: Freshmen Scholarship of SUSTech

Competitions: 2021 Kaggle Competition: Optiver Realized Volatility Prediction (Light GBM, XGBoost, LSTM, N-BEATS)

RLChina 2021 Agent Competition: Snake Battle (DDPG, BiC net)

Major Coursework:

Statistical Linear Model, Multivariate Statistical Analysis, Computational Statistics, Real Analysis, Bayesian Statistics, Generalized Linear Model, Network Science and Computing, Time Series Analysis, Applied Stochastic Processes, Mathematical Statistics, Statistical Computation and Software (R Program), Sample Survey.

Coursera Online Courses – Grade: 100% *Major: Computer Science and Data Science* Website: https://www.coursera.org/

Coursework: Machine Learning, Deep Learning and Neural Network, Convolutional Neural Networks for Visual Recognition.

PROGRAM EXPERIENCE & ACADEMIC DEVELOPMENT

Nongraduating Research Program, National University of Singapore Singapore
Topic: Spectral method of Network Data Analysis Supervisor: Wang Zhou 09/01/2021– 02/28/2022

- Learned basic methodology & results of random matrices: moment methods, Stieltjes transform, semicircle law and MP law.
- Studied the empirical spectral distribution of the random matrix of the stochastic block model (SBM).
- Used the spectral method to solve the problem of community detection when the size of the community is different.

Group of Prof. Han, University of Illinois Chicago Chicago, Illinois
Topic: Model-based Reinforcement Learning Supervisor: Shuo Han 06/11/2021– Now

- Used energy-shaping control to generate demonstrated trajectory from cart-pole system to swing up the pendulum.
- Used LQR tracking control to track the trajectory and to learn how to swing up the pendulum based on an approximated model.
- Applied least-squares estimate and gradient-descent method with backtracking line search to find the optimal parameters.
- Showed that least-squares estimate of model parameters is not optimal for nonlinear system.
- Found that the numerical method with gradient-descent works better for deciding the optimal model parameters.

2020 GEARS Program, North Carolina State University Raleigh, NC State
Topic: Solar Panel Energy Prediction Study Supervisor: Majed Al-Ghandour 08/2020, 03/2021

- Built a data environment, such as data preparation, cleaning, meta data, and ETL (Extract Transform Load).
- Applied multiple linear regression model for variable selection.
- Used image segmentation algorithms to identify solar panels.
- Applied a time series model (SARIMA) to predict the trend of solar energy production over time.
- Established random forest (RF), support vector machine (SVM), XGBoost models to predict solar energy generation.
- Conducted return on investment analysis (ROI) and give reasonable suggestions for investing in solar energy.
- Produced a poster to report the results, and was evaluated as excellent leadership and independent research ability.

Summer 2020 Data Science Program, North Carolina State University – *Grade: 100% (A+)* Raleigh, NC State
Topic: Stocks Price Prediction Study Supervisor: Majed Al-Ghandour 07/06/2020 – 07/17/2020

- Learned to use Python and Tableau for basic machine learning and natural language processing.
- Used linear regression, random forest algorithm and support vector machine (SVM) to predict the price and daily return of stocks.

OTHER SKILLS & INTERESTS

Computer languages: << Python, C/C++, Java, MATLAB, Mathematica, GNU Octave, R, LaTeX>>
Tools: << Jupyter notebook, Spyder, Tableau, Origin, Microsoft Applications (Excel, Word, PowerPoint) >>
Research Interests: << Machine Learning, Dynamic Systems, Optimal Control, Data Mining>>