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)

2020 Interdisciplinary Contest in Modeling (Successful Participant)

2019 Contemporary Undergraduate Mathematical Contest in Modeling (Third Prize of Guangdong Province)

Scholarships: Freshmen Scholarship of SUSTech

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 Analysis of high-dimensional random matrices Supervisor: Wang Zhou 09/01/2021– 02/28/2022

- Learned Basic theory of random matrices.

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 learn how to swing up a pendulum based on an approximate model with parameters.
- Define a reasonable cost function and a distribution of stochastic initial states.
- 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 optimal for model predictive control.
- 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

- Conducted a literature review for cost of solar energy for three types: residential, commercial building and farm solar.
- Built a data environment, such as data preparation, cleaning, meta data, and ETL (Extract Transform Load).
- Applied multiple linear regression (MLR) model for variable selection and used computer vision algorithms (CV) for 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), neural network (MLP) models to predict solar energy generation.
- Conduct investment regression 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: << Statistical Learning, High-dimensional Statistics, Network Data Analysis, Financial Econometrics >>