

Yuan Chen

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EDUCATION

M.S. in Statistics

THE GEORGE WASHINGTON UNIVERSITY

Expected 2021

Washington, DC, USA

B.E. Environmental Science

HOHAI UNIVERSITY

June 2019

Nanjing, China

- **GPA:** 90.7/100; **Math-GPA:** 99.3/100; **Rank:** the 1st place
- **Coursera:** Bayesian Statistics I & II (WITH HONORS), Time Series Analysis, C++ Programming
- **OpenCourseWare:** Real Analysis, Measure Theory & Functional Analysis, Discrete Stochastic Process, Machine Learning, Intro. to Partial Differential Equations, Micro & Macroeconomics

PUBLICATIONS & PREPRINTS

1. **YUAN CHEN**, SONGMING HOU, XU ZHANG, (2019).
An Immersed Finite Element Method for Elliptic Interface Problems with Multi-domain and Triple Junction Points. *Advances in Applied Mathematics and Mechanics*, 11(2019), no. 5, 1005-1021.
2. **YUAN CHEN**, HUA WANG, HUAIYU YAN, DONGFANG LIANG, RUOSHUI LI, *under review*.
Relation of Energy to Temporal and Spatial Variations of Nutrient Distribution in Binhu Network.
3. **YUAN CHEN**, SONGMING HOU, XU ZHANG, *under review*.
A Bilinear Partially Penalized Immersed Finite Element Method for Elliptic Interface Problems with Multi-domains and Triple Junction Points.

PROFESSIONAL EXPERIENCES

Beijing Mobike Technology Co., Ltd. (Meituan.com)

Intern in Department of Data Analysis & Business Intelligence

Beijing, China

June 2018 – Sept. 2018

- Retrieved and aggregated 1 million rows of raw data from mobile app to analyze users behavior for optimizing function design
- Developed a user classification function on Mobike internal platform to filtrate user data according to constraints including users' personal backgrounds, physical & value characteristics and past orders for optimizing effects of targeted campaigns
- Visualized and analyzed label data on malfunction of different bike types by using Circos and Sankey diagrams in Echarts & D3 to detect the association between a specific bike type and particular cause
- Isolated the testing and formal data production environments to decrease the risk of data production failure

RESEARCH EXPERIENCES

Research on Numerical P.D.E., Advisor: Dr. Songming Hou

Co-researcher, Partially Penalized IFEM

Washington, D.C.

Feb. 2019 – Nov. 2019

- Extended Partially Penalized Immersed Finite Element method(IFEM) with an extra jump term to solve 2-domain continuous elliptic interface problems with non-homogeneous flux jump
- Implemented proposed method on numerical examples with NumPy, SciPy in Python to show the optimal order convergence in L_2 , semi- H_1 and L_∞ norm
- Established a weak formulation based on Partially Penalized IFEM and a new triangular grid interpolation scheme to solve elliptic interface problems with multi-domains and triple junction points
- Proved trace inequalities, unisolvence of local linear system and verified optimal order convergence in L_2 , semi- H_1 without deterioration and L_∞ norm (improvement on Classic IFEM) of the method numerically

Co-researcher, *Classic Immersed Finite Element Method*

July 2017 – Feb. 2018

- Solved continuous elliptic interface problems with multi-domains and triple junction points by establishing an interpolation scheme based on classic immersed finite element method
- Implemented proposed method on three numerical examples in NumPy in Python to show the optimal order convergence of numerical results in L_2 and semi- H_1 norm
- Solved elliptic interface problems with discontinuous jump condition on two domains by extending classic immersed finite element method with an extra discontinuous term and verified the optimal convergence in L_2 and semi- H_1 norm numerically

Research on River Dynamic Measurement, Advisor: Dr. Hua Wang

Nanjing, China

Honored Undergraduate Dissertation

Feb. 2019 – Aug. 2019

- Developed an index for river mechanism energy measuring and numerical computation method based on Gauss Quadrature, calculated energy of Binhu network by Python with measured hydrology data & numerical simulation data
- Established a negative exponential relationship between river mechanic energy and nutrient concentration using curve fitting equipped with least square method, implemented with Python
- Developed a data operate system that supports data sheet calculation and data visualization to cleanse, manipulate and visualized 5 million rows of spatial hydraulic and water quality data by Python.

Project of Statistical Analysis on Energy Policy, Hohai University

Nanjing, China

Undergraduate Research Assistant

Dec. 2017 – Feb. 2019

- Used Logarithmic Mean Divisia Index (LMDI) model to decompose the amount of carbon emission from thermal power plants in Beijing into five social-economic and environmental indexes in Python
- Visualized the trends of five indexes from 1997 to 2015 in Python, explored drivers and resistances in mitigating CO_2 emission of Beijing's thermal plants and advised on future eco-friendly energy policy
- Collected approx. 12 million rows of data on African nitrogenous plant trade volume, cleansed and manipulated the data to produce nine input-output tables with Pandas in Python to analyze the scale of nitrogen commerce between Africa and other continents

Project of Water Quality Assess of Yangtze River Estuary, Lab. of I.R.R.D.

Nanjing, China

Undergraduate Research Assistant

Apr. 2018 – Dec. 2018

- Processed 2,000 rows of experimental data by using linear regression and ANOVA in R to evaluate the association between the factors and water quality, and compared the effects of different driving factors on water quality with linear coefficients
- Established a method based on Index Decomposition Analysis (IDA) with driving factors of water quality to explore the quantitative fluctuation of the factors

Innovation and Entrepreneurship Program 2017, Hohai University

Nanjing, China

Project Leader

Mar. 2017 – June 2018

- Applied Seasonal ARIMA forecast model in R to process 2,000 pieces of field bike data to predict the bike demands in each control area at any given time of the day
- Adjusted the number of available bicycles based on the forecast results to meet the fluctuating demands of specific areas

HONORS & AWARDS

- HOHAI UNIVERSITY Honored Student Scholarship 2016, 2017, 2019
- 3rd Prize of China Undergraduate Mathematical Contest in Modeling 2017
- HOHAI UNIVERSITY Science & Technology Innovation Scholarship 2019

SKILLS

- **Coding** C, C++, Python, R, SQL, L^AT_EX, VB, MATLAB
- **Data Analysis** Python (pandas, matplotlib), R (ggplot), QGIS, ECHARTS, D₃, sas
- **Algorithm** C, C++, Python (NumPy, SciPy, SymPy), MATLAB
- **Misc.** Academic Research, MS Office & VBA, Axure RP, Markdown
- **Language** Mandarin Chinese, English