

# ZHUOYANG FU

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## EDUCATION

**Doctor of Philosophy (PhD) in Computer Science**, University of Delaware Aug 2025 - May 2030 (Expected)

**Current GPA: 4.0/4.0**

Advised by [Dr. Weisong Shi](#) (Primary) and [Dr. Yao Hu](#)

Affiliations: [Connected and Autonomous Research \(CAR\) Laboratory](#), [Water Intelligence Lab](#)

Research Key Words: **Agent-based Modeling, Nonlinear System, Computational Social Science**

**Master of Science in Data Analytics Engineering**, Northeastern University Sept 2022 - May 2024

**GPA: 4.0/4.0**

Relevant Coursework: Computation and Visualization for Analytics, Data Mining in Engineering, Neural Network and Deep Learning, Statistical Methods in Engineering, Deterministic Operation Research.

Affiliations: [Shahin's Group](#)

**Bachelor of Computer Science, minor in Mathematical Science**, Kean University, Wenzhou Aug 2018 - Jun 2022

**GPA: 3.652/4.0, Magna Cum Laude**

**The Dean's Scholarship - Research and Innovation**

Relevant Coursework: Data Structures & Algorithms, Analysis of Algorithms, Applied Algorithms & Data Structures, Database Management Systems, Computer Operating Systems, Obj Oriented Anal & Design, HCI, and Software Engineering.

## RESEARCH INTERESTS

My research focused on understanding the nonlinear emergence of behavior within socio-technical systems. I am particularly interested in 1) agent-based learning, 2) nonlinear system, 3) drone computing, 4) computational social science

## PUBLICATIONS

### Published:

- 1 **Fu, Z.**, Yu, G., Liu, M., Lee, C. T., & Lin, J. E. (2021, May). "Data Analysis of Influencing Factors of Air Quality in Chinese Cities." *2021 6th International Conference on Big Data and Computing*. (pp. 61-68).

**Funding Sources:** Wenzhou Kean University Internal Funds.

- 2 Yu, G., **Fu, Z.**, Huang, Y., & Lee, C. T. (2021, August). "Data analysis of Higher Education System Based on TOPSIS and Time Series Model." *2021 5th International Seminar on Education, Management and Social Sciences (ISEMSS 2021)* (pp. 1014-1024). Atlantis Press.

**Funding Sources:** Wenzhou Kean University Internal Funds.

## WORK EXPERIENCE

### Research Assistant (Full-time)

Aug 2024 - Apr 2025

*Python, Tableau, SQL* | Northeastern University

*Hybrid in Boston, MA, USA*

- Conducted a data mining project analyzing the prospects of professionals in data science and STEM fields
- Implemented four different models - **Linear Regression, Lasso Regression, Ridge Regression**, and **Random Forest** on 4 large-scale datasets to compare their performance and visualize the results through Cumulative Gain Chart and Lift Chart

### Web Development and Operation Engineer (Full-time)

Jun 2020 - Sept 2020

*Python, TypeScript, SQL* | Jinlan Diamond Information Technology Company

*Shaoxing, Zhejiang, China*

- Developed 5+ front-end pages for user interaction and server-side data demonstration by **Vue.js** and **React**.
- Maintained 5+ APIs to manage the daily activities in the government one-stop services using **SpringBoot**.
- Optimized slow **SQL** query performance from seconds to milliseconds by analyzing execution plan.

## RESEARCH EXPERIENCE

### Fine-Grained Image Categorization

Jan 2024 - May 2024

*PyTorch, ImageNet* | Advised by Prof. He Wang

*Boston, MA, USA*

- Delved into the captivating world of dog breed classification using cutting-edge deep-learning models.

- Explored and evaluated the efficiencies embedded within each architecture - **ResNet50, Inception**

### Exploratory Data Analysis of the US Police Shootings

Sept 2022 - Dec 2022

*Python, Tableau, SQL* | Advised by Prof. Sultornsanee Sivarit

*Boston, MA, USA*

- Received, cleaned and prepped more than 10000 data using **Python** and **SQL** to help build data models.
- Implemented an interactive dashboard using **Tableau** to show insights of the US Police Shootings.

### Data Analysis of Higher Education Policy Based on TOPSIS and Time Series Model

July 2021 - Sept 2021

*Python, MATLAB, PCA, SARIMA, TOPSIS* | Advised by Prof. Chun-te Lee

*Wenzhou, Zhejiang, China*

- Selected 9 representative indicators as our factors in evaluating the higher education system and developed an evaluation system of the higher education system in the United States.
- Provided some suggestions about policy on the weaknesses of higher education system; and implemented the **SARIMA** (Seasonal Autoregressive Integrated Moving Average) model to simulate the changes after the policy is released.

### Data Analysis of Influencing Factors of Air Quality in Chinese Cities

Apr 2021 - June 2021

*Python, MATLAB, Machine Learning*

*Wenzhou, Zhejiang, China*

- Analyzed the air quality problems of 31 major cities in China using **PCA** (Principal Component Analysis) and technique for order preference by similarity to an Ideal Solution.
- Collected and analyzed the data of air quality with respect to the environmental impact factors of major cities in China and made effort to derive the main factors that affect the air quality in China.
- Conducted research on the comprehensive ranking of air quality in 31 cities in China and demonstrated the thermodynamic diagram of air quality of Chinese cities through the **TOPSIS** (Distance method of superior and inferior solution) method.

## RELEVANT & VALUABLE PROJECTS

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### KU Carpooling Platform - Undergraduate Senior Capstone

Mar 2022 - May 2022

*React, Redis, Typescript, PostgreSQL* | Advised by Prof. Pinata Winoto

*Wenzhou, Zhejiang, China*

- Initiated a mini platform for students to get acquainted with partners who have the same carpooling requirement; developed the frontend by **React** and stored data in **PostgreSQL** and **Redis**.
- Applied WeChat Work robot key to push notifications to the designated WeChat Work group; the whole project was based on Midway Node.js Framework.
- Tested the application under the functional or non-functional requirements gathered from business by Tencent WeTest.

### LookHere: An Auxiliary Application for Autism Children

Sept 2021 - Jan 2022

*Software Engineering, User Interface Design* | Advised by Prof. Tiffany Tang

*Wenzhou, Zhejiang, China*

- Researched the autistic children's characteristics, established the functional and non-functional requirements of the Picture Exchange Communication System (PECS) software, and constructed the Software Requirements Specification (SRS).
- Led UI/UX sub-group using Agile to develop the user interface for autistic children specifically to reduce the harm.

## EXTRA-CURRICULAR ACTIVITIES/TECHNICAL SKILLS

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- **Languages:** Python, Java, C, HTML/CSS, JavaScript, SQL, Shell, MATLAB
- **Developer Tools:** VS Code, Eclipse, PyCharm, IntelliJ IDEA, PostgreSQL, Tableau, Google Data Studio
- **Frameworks:** Django, SpringBoot, Redis, Vue.js, React, AWS
- **Peer Tutor,** Student Academic Support Service Center

*Kean University, Wenzhou*