

# Jiayi (Grace) Shi

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## EDUCATION

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### Columbia University in the City of New York

New York, NY

*MS in Biostatistics (Theory and Methods Track)*

Expected May 2024

- Relevant Modules: Biostatistical Methods, Statistical Inference, Principals of Epidemiology, Data Science, Introduction to Randomized Clinical Trials, Analysis of Longitudinal Data

### University of Nottingham Ningbo China

Ningbo, China

*BSc Applied Mathematics* | GPA: 4.0/4.0 (Top 1%)

09/2018 – Jul 2022

- Relevant Modules: Statistics, Probability, Mathematical Analysis (Real Analysis), Stochastic Process, Modeling with Differential Equations, Vector Calculus, Calculus
- Honors: First Class Degree; National Scholarship (2021); Government Scholarship of Zhejiang Province (2019-2020); Dean's Scholarship (2019, 2020)

### University of California San Diego

Online

*Summer School* | Average: 94.51/100

06/2021 – 07/2021

- Relevant Courses: Fundamental Concepts, Modern Biology

## PROJECT EXPERIENCE

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### Increase data cache efficiency for NDN-Based Remote Health Monitoring System

*Research Assistant*

01/2021 – 07/2022

- Established an efficient model for caching decision strategy considering the lifetime and freshness requirement of each data type
- Derived the caching probability by applying the idea of fractional moving average in statistics
- Considered past request frequency, the disease importance rank and health severity for caching replacement strategy
- Adopted Analytic Hierarchy Process to assign weights to these three indexes
- Compared our model with three other latest caching architectures and proved the efficiency of our model by plotting the simulation results using R
- Worked on the manuscript and published the paper at IEEE Transactions on Computers

### Parameter Estimation for the Stochastic SIS Model

*Project Member*

06/2021 – 07/2021

- Estimated parameters in stochastic differential equations (SDEs) for the SIS model
- Built a multiple linear regression model and applied the least squares estimation approach using R
- Derived the point estimators for the parameters using the generated data sets
- Adopted the long short-term memory network algorithm

### A Novel Framework for Predicting the Spread of COVID-19 by Crowd-Sensing

*Research Assistant*

06/2020 – 04/2021

- Led a team to carry out literary research and found the research gap
- Combined the mobility model, social network model and the enhanced SEIR model to map out the spread of COVID-19 at an agent basis
- Proposed improved models; composed the research paper with LaTeX and plotted the simulation results in MATLAB
- Published the paper as the first author at The International Wireless Communications and Mobile Computing Conference (2021)

## CONFERENCES AND PUBLICATIONS

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### **The International Wireless Communications and Mobile Computing Conference (2021)**

- J. Shi, W. Sheng, P. Kar, M. Roy, and S. Datta, "A Novel Framework for Predicting the Spread of COVID-19 by Contact Tracing through Smartphone", 2021 International Wireless Communications and Mobile Computing (IWCMC), 2021, pp. 570-575, doi: 10.1109/IWCMC51323.2021.9498988.

### **IEEE Transactions on Computers**

- P. Kar, K. Chen and J. Shi, "DMACN: A Dynamic Multi-Attribute Caching Mechanism for NDN-Based Remote Health Monitoring System," in *IEEE Transactions on Computers*, 2022, doi: 10.1109/TC.2022.3197955.

## SKILLS & TRAINING

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**Technical Skills:** R, Python, MATLAB, Microsoft Office

**Languages:** Native in Mandarin; Proficient in English