# Zhao Ma

MASTER STUDENT IN INFORMATICS

*The Pennsylvania State University*

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## Education

**The Pennsylvania State University**                              *University Park, PA*

MASTER OF SCIENCE IN INFORMATICS, CONCENTRATION ON DATA SCIENCE                 *August 20201 - current*

- **GPA**:3.72/4
- **Advisor**:Justin Silverman
- **Course**: Data Mining, Adversarial Machine Learning, Deep Learning, Compiler Construction, Real Analysis

**Soochow University**                                             *Suzhou, China*

BACHELOR OF SCIENCE IN PHYSICS                                    *Sep. 2016 - June 2020*

- **GPA**:3.4/4.0, top 10%
- **Advisor**:Chengjie Zhang

## Experience

**Justin Silverman's Lab, Penn State University**                 *State College, US*

STUDENT RESEARCHER                                               *Oct 2021 - Current*

- **Error in high—dimensional models:** Especially when modeling high-dimensional data, stepwise modeling is often used both due to ease of application and computational tractability. Yet error can propagate through sequentially applied estimators in unintuitive ways leading to inferential errors. Here I applied estimator theory to create a quantitiative framework for exploring and explaining how error propagates through sequentially applied estimators in stepwise modeling.

**School of Physical Science and Technology, Soochow University**     *Suzhou, China*

RESEARCH ASSISTANT                                              *July 2017 - May 2019*

- **Detecting quantum coherence:** Detecting and quantifying coherence are two fundamental problems in quantum resource theory. I introduced feasible methods to detect and estimate the coherence by constructing coherence witnesses for any finite-dimensional states. We also present an application of coherence in a quantum metrology task, in which we estimate an unknown parameter by measuring our coherence witness.
- **The impact of spontaneous protection on the spread of epidemics:** To predict the spread of epidemic disease, I took both the human behaviour and evolution of disease into account. To simulate the human dynamics, I adopted *Eguíluz and Zimmermann* model. I also merged game theory into the prediction of human behaviour like protection strategies. Based on these assumptions, I simulated how disease spreads with different evolutionary features of disease as well as human behaviour.

**Suzhou Juhe Data**                                            *Suzhou, China*

DATA ANALYST INTERN                                            *July 2019 - Sep. 2019*

- I worked in marketing department where my task was to collect data from various platforms. Also, I adopted various applied statistical strategies to analyze this data. Then I translated the results into an understandable report for people with less knowledge of statistics. Besides, I gave advice on advertising strategies based on my analysis results.

## Honors

- Advanced Mathematics Competition Second Prize
- Academic Excellence Award
- Outstanding Student Cadre

## Publication

- **Zhao Ma**, Zhou Zhang, Yue Dai, Yuli Dong, and Chengjie Zhang, "Detecting and estimating coherence based on coherence witnesses", *Phys. Rev. A* **103**, 012409 (2021).