

Ziming Liu

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EDUCATION

09/2016-06/2020	PEKING UNIVERSITY	Beijing, China
	Bachelor of Science in Physics, School of Physics (PHY)	
	Research assistant 02/2018-06/2020	
	Research about intersections between machine learning and high energy physics	
01/2019-02/2019	STONY BROOK UNIVERSITY	New York, USA
	Winter intern at department of chemistry (CHEM)	
	Research about intersections between machine learning and nuclear chemistry	
06/2019-09/2019	UNIVERSITY OF CALIFORNIA, SANTA BARBARA	California, USA
	Summer intern at department of electrical and computer engineering (ECE)	
	Research about machine learning methods for uncertainty quantification and tensors	
09/2020-06/2025	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	MA, USA
	Doctoral program	

FEATURES

- Strong backgrounds in machine learning and data mining
- Strong backgrounds in physics
- Sufficient experience in mathematics and statistics
- Versatile computer skills: Python (packages: sklearn/tensorflow/pytorch for machine learning and deep learning), Mathematica, LaTeX, Matlab, C/C++/C#, Linux

RESEARCH INTERESTS

- Applications of machine learning to science and finance
- Intersection of intelligence, physics and information
- Time-series models and generative models

RESEARCH

1) July. 2018-March. 2019 **Principal Component Analysis of Collective Flow in Relativistic Heavy-Ion Collisions**

Advisor: Huichao Song, Peking University

Results:

- **The paper has been accepted by EPJC (first author).** Title: Principal Component Analysis of Collective Flow in Relativistic Heavy-Ion Collisions. Authors: Ziming Liu, Wenbin Zhao, and Huichao Song.
- **The research was presented by me on Initial Stages 2019 (oral, June 2019 at Columbia University in New York).** Title: Principal Component Analysis and its Applications to Relativistic Heavy-Ion Collisions.

2) January. 2019-March. 2019 **The Limitations of Principal Component Analysis to Study Factorization Breaking Effects of Collective Flow**

Advisor: Jiangyong Jia, Department of Chemistry, Stony Brook University

Results:

- **The paper has been submitted to Physics Letter B (first author).** Title: The Limitations of Principal Component Analysis to Study Factorization Breaking Effects of Collective Flow. Author List: Ziming Liu, Arabinda Behera, Huichao Song, and Jiangyong Jia.

3) June. 2019- September.2019 **Quantum-Inspired Hamiltonian Monte Carlo for Bayesian Sampling**

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Advisor: Zheng Zhang, Department of Electrical and Computer Engineering, University of California, Santa Barbara

Results:

- *This work has been invited as a talk in SIAM 2020 data science workshop.*
- *The paper has been submitted to International Conference of Machine Learning (ICML) 2020.*

4) April 2019 Influenza Modeling Based on Massive Feature Engineering and International Flow Deconvolution

Collaborators: Yixuan Wang, Dian Wu, Zizhao Han

- *This paper serves as a submitted work to the Citadel Data Open Final Competition at The New York Stock Exchange (NYSE) in April, 2019. We participated in this international event as the champion of the regional competition in Beijing.*

MATHEMATICAL MODELING AND OTHER EXPERIENCES

- Led a group of eight competing for CUPT (China Undergraduate Physics Tournament) which requires us to solve real-life physical problems and won the second place in Peking University
- Used C# to develop an online Electrical Laboratory software with a group of four
- Held a seminar for hydrodynamics, participated in a seminar for numerical analysis, holding a seminar for quantum computation and quantum information.

AWARDS AND HONORS

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| • Peking University Merit Student Award | 2019, 2018, 2017 |
| • Scholarship of Robin Lee (5 th place out of 200 students) | 09/2019 |
| • Shenzhen Finance Institute scholarship (7 th place out of 200 students) | 09/2018 |
| • The Championship of 'Data Open' competition in Beijing | 05/2018 |
| • Scholarship of China National Petroleum Corporation | 09/2017 |
| • 2 nd Place in Male Rope Skipping Competition in Peking University | 03/2018 |
| • 2 nd Place in Latin Dance Competition in Peking University | 06/2017 |