

# MINGHUI ZHAO | Résumé

Seeking 2021 summer internship @Data Science @Machine Learning @Artificial Intelligence

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## RESEARCH & WORK EXPERIENCE

### Physics analysis – Data calibration and analysis

**Leading analyst** Iowa State University & Brookhaven National Lab

📅 Aug 2017 – Current

📍 Ames, IA, U.S

🔔 Monte Carlo simulation of proton-proton collision and Drell Yan  $Z^0/\gamma^* \rightarrow e^-/e^+$  analysis, extract  $e^-/e^+$  signal pair from background which is  $10^6$  larger than the signal. By using **machine learning method of boost decision tree**, we can improve signal/background ratio in 2 order ( $10^2$ ).

🔔 Experimental data calibration and analysis, using gaussian and polynomial fitting for calibration.

🔔 Develop c++ classes for data calibration and analysis, and a lot of effort for plotting and data visualization.

Shell scripting

C/C++

R/Python

Perl

Machine Learning

### Experiment – Detector assemble and maintenance

**Detector expert** Brookhaven National Lab & Iowa State University

📅 May 2016 – Aug 2017

📍 Upton, NY, U.S

🔔 Assembled our scintillator detector which called FPOST, tested and calibrated silicon photomultiplier (SiPM) device.

🔔 I was the FPOST detector maintenance expert during the experiment.

Oscilloscope

Electronics

Electric circuit

C/C++

Shell scripting

### Model Simulation and detector operation

**Leading analyst** Lanzhou Heavy Ion Accelerator National Lab

📅 Aug 2011 – Jul 2014

📍 Beijing & Lanzhou, China

🔔 Model simulation and experimental data analysis of  $^{40}\text{Ca} + ^{40}\text{Ca}$  and  $^{129}\text{Xe} + ^{120}\text{Sn}$  collision, a paper published.

🔔 Detecting cosmic ray muons to obtain experimental skills.

C/C++

Shell scripting

Oscilloscope

Electric circuit

## EDUCATION

### Ph.D, majoring in nuclear physics

🎓 Iowa State University (ISU)

📅 Aug 2014 – Current

📍 Ames, Iowa, U.S

### MSc, majoring in nuclear physics

🎓 Institute of Modern Physics, UCAS

📅 Sept 2012 – Aug 2014

📍 Lanzhou, China

### MSc, first year, major in nuclear physics

🎓 University of Chinese Academy of Sciences (UCAS)

📅 Sept 2011 – Aug 2012

📍 Beijing, China

### BSc, major in physics

🎓 Zhengzhou University (ZZU)

📅 Sept 2007 – Aug 2011

📍 Zhengzhou, China

## SKILLS

### C++

🔔 Mainly working tool to analyze our huge (100T) experimental data under framework [ROOT](#).

🔔 Develop classes to deal with data and visualize the data.

### Machine Learning

🔔 Apply machine learning methods under multi-variate data analysis toolkit framework [TMVA](#).

🔔 Familiar with scikit-learn and TensorFlow.

### R & Python

🔔 Mainly use them to deal with and visualize simple data.

🔔 Use them to make automation data visualization videos for hobby.

### SQL

🔔 Self learning, have certificate from [kaggle](#).

🔔 Mainly implement SQL query through our c++ interface.

### Others & Linux related tools

🔔 Shell scripting, Perl, Gnuplot, Fortran

🔔  $\text{\LaTeX}$ , Vim

## HONORS & ROLES



### Student academic career

📅 2016 – current RA Scholarship

📅 2014 – 2016 TA Scholarship

📅 2011 – 2014 Fellowship

📅 2007 – 2011 Third Prize Scholarship

Passionate

Proactive

Self-discipline

Independent thinking

Critical thinking



### Activities

English Corner organizer in 2013 – 2014.

Member of Open Source Association of USCA during 2011 and 2014.

Social skills

Teamwork

Open minded

## LANGUAGES

English

Fluent

Chinese

Native

## OTHER INTERESTS

Blender 3D

Open Source

History

Tech Product Review

Data Visualization

Video Editing