

# 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

**ML (Boost Decision Tree) method used**

📅 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

Experiment – Detector assemble and maintenance

**Detector expert**    **Brookhaven National Laboratory**

📅 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

**Calculation and experimental skills**

📅 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**

🎓 GPA: 3.68/4

📅 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)**

🎓 GPA: 3.66/4

📅 Sept 2011 – Aug 2012    📍 Beijing, China

BSc, major in physics

**Zhengzhou University (ZZU)**

🎓 Score: 3.59/4

📅 Sept 2007 – Aug 2011    📍 Zhengzhou, China

## 📁 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

I organized of English Corner during 2013 and 2014. I was a member of Open Source Association of USCA during 2011 and 2014.

Social skills    Teamwork    Communication  
Open minded

## 📁 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.

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

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

## 📁 LANGUAGES

English    Fluent

Chinese    Native

## 📁 OTHER INTERESTS

Blender 3D    Open Source    History    Tech product review    Data Visualization    Video Editing