

MINGHUI ZHAO | Résumé

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

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📍 Ames, Iowa, US

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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 (ZJU)

📅 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](#). Check my [machine learning classification project](#) in nuclear physics.

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

🔔 \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