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 — **Brookhaven National Lab & Iowa State University**

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 maintnance

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 sillicon photomultiplier (SiPM) device.
- I was the FPOST detector maintnance 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 $^{40}Ca + ^{40}Ca$ and $^{129}Xe + ^{120}Sn$ collision, a paper pusblished.
- 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 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
- 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