Siyu Jian

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SUMMARY

Physicist with extensive experience in software development, big data analysis, sophisticated modeling and Monte-Carlo simulation. 10 years experience in C++ development. Strong knowledge of statistics and rich skills on programming and algorithm design. Looking for internship position in software development.

GRAD LEVEL COURSEWORKS & SKILLS

Programming language: C/C++(10 years), Python, SQL, BashScripts, Java
Developer Tools & Platform: : Git, Docker, vim, Clion, PyCharm, Altium Designer, VS Code, IntelliJ, Eclipse-CDT, Google Cloud Platform
Courses: Data Mining(Spring 2021), Information Retrieval(Spring 2021), Algorithms(Fall 2020), Machine Learning(Spring 2020), Qsikit, Statistics, Linear Algebra, Advanced Mathematics

EDUCATION

University of Virginia, *Charlottesville, VA*
Doctor of Philosophy, Computational Physics *Aug. 2015 – present.*

China Institute of Atomic Energy Beijing, China Master of Science, Nuclear and Particle Physics Aug. 2012 – Jun. 2015 Graduate with honor
Shandong University, *Shandong, China*
Bachelor of Science in physics *Aug. 2008 – Jun. 2012*
Outstanding scholarship of Shandong University

PROJECTS

ROOT_GUI Detector Analyzer | *C++, SQLite, GUI, BashScript, Docker* Jan 2017 – Present
- Developed a GUI application using C++ for high performance tracking detectors' online monitor, noise analysis, detector auto-alignment and tracking analysis.
- Read data directly from SQLite Database and analyzed the data with multi-thread and multiple computing nodes.
- Implemented multiple work mode: GUI mode on the local computer and batch mode on the HPC System.
- This GUI application is currently widely used by Jefferson National Laboratory, Stony Brook University, University of Virginia and Hampton University for Gas Electron Multiplier Tracking detector data analysis.

Spectrometer Calibrator for Electron Accelerator | *C++, BashScript, Python* May 2019 – Present
- Built kernel SVM classifier to distinguish particles' different patterns caused by electron accelerator.
- Predicted particles' position with regression and neural network. Performed feature selection with Lasso method and model selection via cross validation.
- Achieved less than 0.5% error for reconstructing the Particle Momentum and Scattered Angle which is the highest accuracy in this research area til now.

GEM Detector Acquisition System | *C* May 2017 – 2019
- Participate in the development of the Linux Driver used for control the VME data acquisition Module.
- Tested and debug the data acquisition system in the test environment. Implemented the interface to write the experiment data to the database of data center.
- The system successfully deployed to Jefferson National Lab Hall A for online nuclear experimental data acquisition(1G/s).

PyQuant | *Python, MySQL* May 2018 – 2019
- Implemented a distributed crawler to automatically gather the real time stock data from NASDAQ and save to MySQL database.
- Built a web application to support stocks data queries.
- Applied Pair-Trading strategy to predict the stocks' buy and sell points.

Search Engine for Arxiv papers | *Java* March 2021 – present
- Performed text processing with tokenization, normalization,stemming and stopwords removal for Arxiv papers' abstracts.
- Constructed Inverted indexer for accelerating text access.

RESEARCH EXPERIENCES

Research assistant, Teaching assistant
- Worked on the Jefferson National Lab Lead Neutron Skin thickness experiment(PRex-II). Took charge of the manufacture, installation, operation and data analysis of the high accuracy tracking detector of the experiment
- Research and Develop the Online Data Acquisition System for the Super Big-bit Spectrometer in Jefferson Lab
- Gave 3 talks in top physics conference, published **14 papers** in top physics journals with **288 citations**