Siyu Jian

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SUMMARY

Physicist with extensive experience in software development, big data(Petabyte) analysis, fix point hardware acceleration, sophisticated modeling and Monte-Carlo simulation. 10 years experience in C++ development. Strong knowledge of statistics and rich skills on programming and algorithm design.

SKILLS

Programming language: C/C++, Python, Java, SQL, BashScripts
Developer Tools & Libraries: : Pandas, NumPy, Matplotlib, Scikit-learn, XGBoost, Pytorch, Linux/Unix, Git, Docker, vim, Clion, PyCharm, AWS, Django, Reactjs

EDUCATION

University of Virginia, *Charlottesville, VA*
Doctor of Philosophy, Computational Physics, GPA:3.70   *Aug. 2015 – present.*

China Institute of Atomic Energy, *Beijing, China*
Master of Science, Nuclear and Particle Physics, Graduate with honor   *Aug. 2012 – Jun. 2015*

Shandong University, *Shandong, China*
Bachelor of Science in physics—Outstanding scholarship of Shandong University   *Aug. 2008 – Jun. 2012*

Industry EXPERIENCE

SenseBrain Technology | *Software Engineer Internship*   Sep 2021 – Dec 2021
- Participate in the design of raw image process pipeline on mobile device. Imply Joint Bilateral Filter and k-Mean Rapid and Accurate Image Super Resolution filter to reduce white noise.
- Participate in the development of K-mean RAISR filter with fix point hardware acceleration algorithm in c++. Improved the fix point exponential, square root hardware acceleration Logarithm. The overall accuracy increased 10% with similar CPU usage.

Novelis Inc | *Machine Learning Engineer Internship*   Jun 2021 – Sep 2021
- Lead the development of hyper-parameter tuning module.Designed the architecture of multi-thread hyper-parameter tuning module which embeds Grid-Search, random-search, Bayesian Hyper-parameter tuning method.
- Participate in the development of Novelis Machine Learning Infrastructure Platform. Work with the team in Opt-Opt, imply the Opt-Opt Bayesian hyper-parameter cloud service in Novelis Machine Learning Platform.

EntangledQuery | *Lead of Software development*   Aug 2021 – Now
- build EntangledQuery: a quantum computing knowledge sharing platform.
- Lead the development of the frontend and backend of the website. Maintain the server deployed on Amazon Web Service.
- Pitched as the finalist both at Q2B 2021 Practical Quantum Computing pitch competition and University of Virginia entrepreneurship-cup competition.

Research PROJECTS

Particle Detector Realtime Data Analyzer | *C++, SQLite, GUI, Bash-Script, Docker*   Jan 2017 – Present
- Independently developed a GUI application with online monitor, noise analysis, detector auto-alignment and tracking analysis modules in c++ used for high performance tracking detectors.
- Developed an algorithm to remove the common mode and random white noise. Extract the 2D particle information from the highly noisy real-time streaming data.
- This GUI application is currently used by Jefferson National Laboratory, Stony Brook University, University of Virginia and Hampton University for Gas Electron Multiplier Tracking detector data analysis.

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).

The Lead Radius Experiment | *C++, Bash-Script, Python*   May 2019 – Present
- Worked on the Jefferson National Lab Lead Neutron Skin thickness experiment(PRex-II). Took charge of the design and data analysis of the high accuracy tracking detector of the experiment. Developed a analysis software with C++ to process the large scale data set on HPC.
- Build a regression pipeline to predicted particles' position. 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.
- Gave 3 talks in APS physics conference, published **24 papers** in top physics journals with **540 citations**