Shi Guo

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SUMMARY

7 years of programming experience in c++ and Java in both research and industry.
4 years of experience of high performance Monte Carlo simulation.
4 years of experience of production data analysis using python with scipy, pandas library.
5 years of experience in designing semiconductor testing program.
Strong math background in linear algebra, numerical optimization, probability and measure theory, stochastic calculus.
Strong physics background in quantum mechanics and solid state physics.

SKILLS

Programming: C++, Java, Python scripting(Numpy), Matlab, Linux(Bash Script, Vim)
Coursework and Certificate: Coursera Certificate in Machine Learning and Deep Learning, SAS(Regression and Modeling Certificate), Algorithms and Data Structure.

EXPERIENCE

Application Engineer, Advantest America, Inc. July.2013-Now
Developed and delivered system on chip(SoC) test programs for Advantest 93K automated tester platform.

Achievement Highlights

- Developed test methods in C++/java for DC test, digital test, RF(Transmitter/Receiver) test.
- Developed universal test method library for On-Die Parametric test on different TI DSP device, provide device characterization results to R&D.
- Built data analysis tool using python(including scipy, pandas library) to do data analysis.

Research Assistant, Department of Physics, North Carolina State University, Jun.2009-Jun.2013
Conducted computational physics research focusing on electronic structure using quantum Monte Carlo method, developed and maintained computational software code in C++ for 4 years.

Achievement Highlights

- Conducted parallel-computing simulations on supercomputers using first-principles methods(Hartree-Fock, Configuration Interaction, Density Functional Theory).
- Conducted research using Quantum Monte Carlo research to evaluate different physical quantities in various kinds of system(atoms, molecules, solids).
- Evaluated the dipole moment of weakly bonded ultracold molecules precisely using Quantum Monte Carlo method and provided the data with good quality to research funding agency.
- Carried out numerical wavefunction optimizations(steep descent, quasi-Newton, etc.) to reduce the data fluctuation.
- Introduced new mathematical models for electron spin and built into the existing algorithm to extend the features of the program to handle spin-dependent systems, designed every class and method independently using C++(10k lines).
- Performed the first successful calculation in literature on relativistic effects of two dimensional electron gas in semiconductor devices.

EDUCATION

- **Ph.D Physics**
  North Carolina State University, Raleigh, NC, USA, Dec.2013 GPA:3.63/4.0
- **B.S. Physics**, **Minor in Economics**
  Shanghai Jiaotong University, Shanghai, China, Jun.2007

PUBLICATION

- **Shi Guo**, Michal Bajdich, Lubos Mitas and Peter J. Reynolds; Study of dipole moments of LiSr and KRb molecules by quantum Monte Carlo methods; Molecular Physics Vol. 111, Iss. 12-13,2013
- Cody A. Melton, Minyi Zhu, **Shi Guo**, Alberto Ambrosetti, Francesco Pederiva, and Lubos Mitas; Spin-orbit interactions in electronic structure quantum Monte Carlo methods; Phys. Rev. A 93, 042502