

JIAO LIN

Computational Scientist · 626-200-5247 · jiao.lin@gmail.com · <http://linjiao.info> · <https://github.com/yxqd>

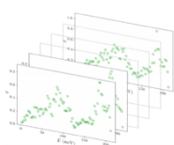
EXPERIENCE

2022 – **NOW: Senior Quantitative Financial Analyst**, Bank of America
2020 – 2022: **Lead Instrument Scientist/Senior Staff**, Oak Ridge National Lab
2019 – 2020: **Principal Scientist**, Sateletics Inc
2015 – 2019: **Software Scientist**, Oak Ridge National Lab
2008 – 2015: **Computational Scientist**, California Institute of Technology
2005 – 2008: **Assistant Scientist**, California Institute of Technology
2004 – 2005: **Postdoctoral Fellow**, California Institute of Technology

EDUCATION

JUNE 2004, **PhD**, Materials Science, California Institute of Technology
JUNE 1999, **Master of Science**, Condensed Matter Physics, Chinese Academy of Sciences
JUNE 1996, **Bachelor of Science**, Physics, Peking University

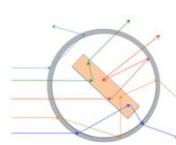
ACHIEVEMENTS



[Emerging applications of super resolution imagery techniques in neutron scattering data using regularized optimization](#)



[High resolution satellite image correlation helps study glacier erosion law](#)
50,000 lines of C++/python



[Monte Carlo neutron ray-tracing simulations for neutron scattering experiments](#)
570,000 lines of C++/python

SKILLS

Computing

- Python/C++/JAVA/Fortran; PySpark; javascript; Matlab/Mathematica; conda; Jupyter; keras, ...
- Monte Carlo ray-tracing
- High performance computing. MPI / CUDA(numba) / OpenMP

Research

- Quantitative Finance
- Computer vision/Satellite imagery
- Neutron scattering / Neutron imaging
- Physics / Materials science

EXAMPLE COMPUTING PROJECTS

- Conceptualized and implemented a Domain Specific Language for “Variable Transformation” with PySpark for quantitative finance model development. ([link](#))
- Created a model testing tool that streamlines model-development process, and speeds up model development productivity by ~10 fold for a highly-sophisticated, account-level quantitative finance model for credit cards

- As the PI of a DOE LDRD project, conceptualized two novel methods to apply Super-resolution imagery methods to experimental inelastic neutron spectra, and led the team to implement the methods and demonstrate their applications ([link](#))
- Architected and led the effort to accelerate the MCViNE simulations with CUDA by using numba
- Developed [MCViNE](#), a Monte Carlo neutron ray-tracing simulation package (~570k lines) with python and C++. Performed Monte Carlo neutron ray tracing simulations for design of neutron instruments at the Second Target Station of the Spallation Neutron Source, and for design of sample environments including collimators and furnaces. Contributed to all 8 instruments selected for the first phase of the STS project. ([link](#))
- Created a python framework for remote-sensing imagery processing pipelines that allows executing local and remote (AWS) workflows ([link](#))
- Created a CT reconstruction workflow tool for CG1D neutron imaging beamline at HFIR and facilitated automatic CT reconstruction ([link](#))
- Created and maintained the linux-64 conda recipe for Mantid, a large neutron data reduction C++/python package (1M lines of code), and its system-tests jenkins task.
- Used dash/plotly to build a web application for resolution functions of DGS instruments ([link](#))
- Developed a python/C++ package, including a semi-global matching algorithm using dynamic programming, for the COSI-Corr project, a satellite image correlation tool.
- Led the inelastic neutron scattering team of the DANSE software project, developing a series of data reduction, analysis, and modeling tools.
- Studied in theory the mechanism of the linear and nonlinear optical properties of crystals, especially borate series, using *ab initio* calculations; developed a new computation method. The work has been cited 30-50 times per year since 2015, showing the long-lasting impact of original computational research.
- More at <https://linjiao.info/software/>

SUPERVISION / MENTORING

- **Dr. Fahima Islam**, Postdoc fellow, “Super-resolution reconstruction for Inelastic Neutron Scattering Spectra from Direct Geometry Chopper Spectrometers”, ORNL
- **Ian Lumsden**, “SCADGen: converting MCViNE 3D models to OpenSCAD models”, ORNL
- **Dr. Hillary Smith**, Postdoc fellow, “Virtual neutron facilities at SNS”, Caltech.

SYNERGETIC ACTIVITIES

- **ORGANIZER** for the Spallation Neutron Source Second Target Station Computer Science and Math Workshop 2022
- **LECTURER** for SNS Instrument Building School, ORNL 2021
- **REVIEWER** for The Journal of Open Source Software, Journal of Applied Crystallography, Transactions on Geoscience and Remote Sensing, Experimental Mechanics, etc.

AWARDS

- **2021**, Performance Award, Spallation Neutron Source Second Target Station, ORNL.
- **2016**, Significant Event Award, Neutron Data Analysis and Visualization Division, ORNL.
- **2016**, Performance Award, Neutron Data Analysis and Visualization Division, ORNL.

PUBLICATIONS

See <https://linjiao.info/publication/>