

## **Postdoctoral Associate – Real Time Data Interpretation and Experimental Planning through Machine Learning**

The Stanford Synchrotron Radiation Lightsource (SSRL), a directorate of the SLAC National Accelerator Laboratory, has an opening for a Postdoctoral Scholar to develop machine learning approaches for real time data analysis, interpretation, and experimental design. The focus of this project is developing machine learning approaches to automate real time data analysis to extract material parameters during high throughput experimentation and couple these analyses to sequential learning algorithms for design of experiment. Collectively these approaches will enable closed loop autonomous experimentation at scientific user facilities. The postdoctoral appointment will involve:

- Development of software to enable on-the-fly data quality monitoring
- Development of software to enable on-the-fly data reduction
- Implementation of machine learning algorithms to enable on-the-fly material structure estimation
- Implementation of established strategies for segmentation of complex datasets and rapid extractions of trends and relationships
- Integration of data interpretation with beamline control systems to enable closed loop autonomous instrument control
- Implementation of analytical models for rapid fitting of scattering data and x-ray absorption spectroscopy data

In addition to the tasks outlined above, there will also be room for the postdoctoral scholar to bring their unique perspective to this project and pursue research focused on the utilization of machine learning to solve complex problems with respect to x-ray data interpretation, active learning for experimental control and automation of scientific research.

### Basic Qualifications:

- a Ph.D. in a physics or physical chemistry with a strong programming background, or a B.S. in computer science
- Experience with python, Java, C++, or another object-oriented language
- Working knowledge in machine learning, data mining, or information retrieval
- Experience with iterative, test driven development
- Good interpersonal skills and strong communication skills
- Ability to participate in a team
- Experience working within large inter-university collaborations is strongly desired.

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