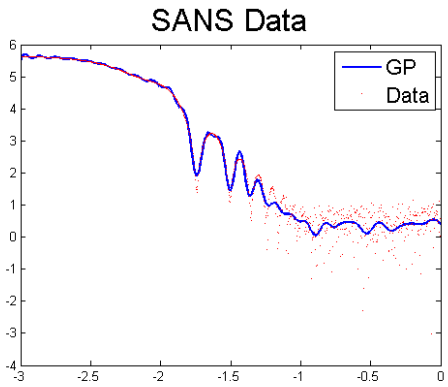
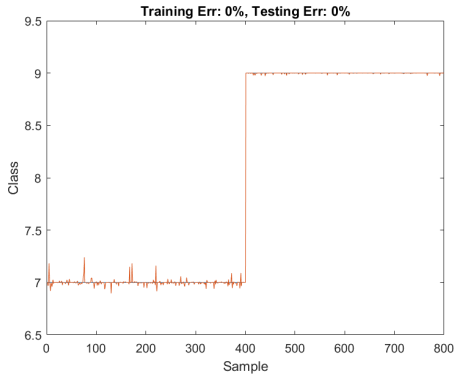
Developing a Classification System for Neutron Scattering

Achievement: Developed Gaussian processes regression (GPR) methods to yield compressed feature representation of small angle neutron scattering (SANS) data sets for class or shape machine learning.

Significance and Impact: GPR is a widely used tool within the statistics community to represent data with uncertainty. This study adapts the sampling pattern of SANS data in GPR so that the regression coefficients can be used in machine learning methods





Research Details:

- Full information capture and compression of SANS data.
- Uncertainty in machine learning can be represented directly by GPR.
- Among the Siemens Class of 2017 regional finalists, http://siemensusa.synapticdigital.com/Featured-Multimedia-Stories/siemens-competition-2017/s/a79320cd-06c6-45e7-b58e-faf6d581a11c

Sponsor/Facility: This research was performed by Candace Pang and Radha Awasthi at ORNL as a requirement for ORHS math thesis program. Pang and Awasthi were mentored by Archibald, and worked with the LDRD, 'An Expert System for Automated Modeling of Small-Angle Neutron Scattering Data' led by Heller.

ORHS Students: C. Pang & R. Awasthi

LDRD Team: R. Archibald[3], M Doucet[2], R. French[3], T. Johnston[3], W. Heller[2], R. Patton[3], & S. Young.

[1]Oak Ridge High School,
[2]Neutron Sciences Directorate, ORNL,
[3]Computing and Computational Sciences Directorate, ORNL.

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