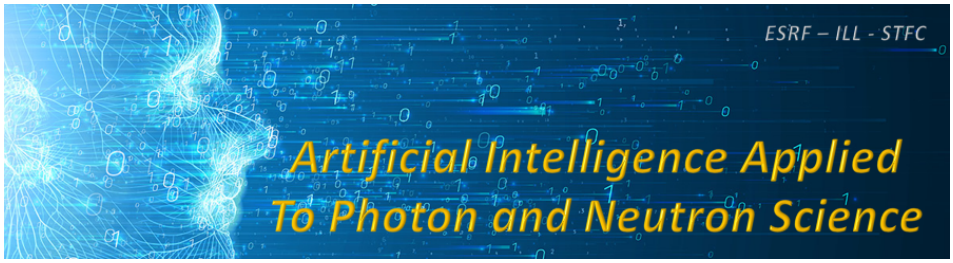

Contribution ID: **42** Type: **not specified**

Machine Learning at ILL

Tuesday, 12 November 2019 16:50 (25 minutes)

Recently, by using deep learning methods, computers are able to surpass or come close to matching human performance on image analysis and pattern recognition. This advanced method could also help interpreting data from neutron scattering experiments. Those data contain rich scientific information about structure and dynamics of materials under investigation, and deep learning could help researchers better understand the link between experimental data and materials properties. We applied deep learning techniques to scientific neutron scattering data. This is a complex problem due to the multi-parameter space we have to deal with. We have used a convolutional neural network-based model to evaluate the quality of experimental neutron scattering images, which can be influenced by instrument configuration, sample and sample environment parameters. Sample structure can be deduced during data collection that can be therefore optimised. The neural network model can predict the experimental parameters to properly setup the instrument and derive the best measurement strategy. This results in a higher quality of data obtained in a shorter time, facilitating data analysis and interpretation.

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Session Classification: Afternoon 2