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Abstract: During the past decade machine learning has been applied successfully to many fields from medicine to finance and even advertising. In this talk, I will introduce the basics of machine learning with a particular focus on neural networks. Next, I will discuss how autoencoders, a particular type of neural network, can be used for reduction of noise in images obtained by the scanning transmission electron microscope (STEM). After removing much of the noise, quantitative information from the image is easily extracted which can be used for further analysis. Results from applying this technique for STEM images of LaSrMnO$_3$/LaMnO$_3$ superlattices as well as of defects in SrTiO$_3$ will be presented.

The seminar will be held at 1:30 pm in 2214 SES.