COA > SHOWCASE

I am currently developing an AI, i.e., Machine Learning (ML), approach to improve building energy efficiency. My presentation will provide a simple introduction to ML and show the impact of the ML my group is doing to increase the ability of building operators to be able to find faults in their heating and cooling systems, both upcoming failures and degradation in energy efficiency. I will also show the ability of current Fault Detection and Diagnostics (FDD) and how the ML approach will improve these diagnostics.

My group has built a conventional computational system that enables gathering massive amounts of data and we have several years of data from over 100 buildings that will be used in the ML system to test and verify the ML performance. Our current FDD capability uses first principles to algorithmically find machine faults and control logic errors in buildings.

The ML system will also provide the probability that the ML analysis is correct/incorrect. Current general purpose ML systems exhibit a "correctness" level around 90%, meaning that around 10% of the results are incorrect. The ML system will use first principles to improve the performance of the FDD algorithms.

Attendees will learn how AI works and the strengths and weaknesses that ML has.

Our plan is to have the first version available to our licensees in the Spring/Summer of 2025.

Charles Culp