Mapping Machine-Learned Physics into a Human-Readable Space

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Machine Learning methods are extremely powerful but often function as black-box problem solvers, providing improved performance at the expense of clarity. Our work describes a new machine learning approach which translates the strategy of a deep neural network into simple functions that are meaningful and intelligible to the physicist, without sacrificing performance improvements. We apply this approach to benchmark high-energy problems of fat-jet classification and find simple new jet substructure observables which provide improved classification power and novel insights into the nature of the problem.

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