Neural Network-Based Surrogate Model for
a Crude Oil Distillation Unit

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This paper presents a neural network modeling approach for developing a surrogate model and a feasibility classifier for a crude oil distillation unit of a commercial process simulator, Aspen HYSYS. Surrogate model is required to develop an optimization algorithm for quickly providing a large amount of output data. Feasibility classifier is necessary to filter infeasible designs. The inputs to the surrogate model were operating conditions of a distillation column, while the outputs were related to column performance. The surrogate model was constructed with converged simulation data generated in HYSYS by manipulating inputs through an interface developed in Python. The feasibility classifier was constructed based on all convergence data. The surrogate model and the feasibility classifier were each built with neural network modeling method.