ICPE 689 - SPTP: Data Science for Process Systems

Spring 2025

Final Exam

Name:

1. Please pick one system and elaborate how you would design a model predictive control (MPC) system, which we learned in class, to this system in detail. More specifically, you may want to elaborate (1) the manipulated variables, (2) state/input constraints, (3) cost function, (4) MPC formulation (which includes everything above in the form of a quadratic programming optimization problem), and (5) key challenges associated with solving the optimization problem for MPC.

2. Please explain what would be the key limitation of the hybrid modeling approaches we discussed in class. How you would like to improve the limitations? Please provide one or two alternative ideas for each of them.