Lab 5B

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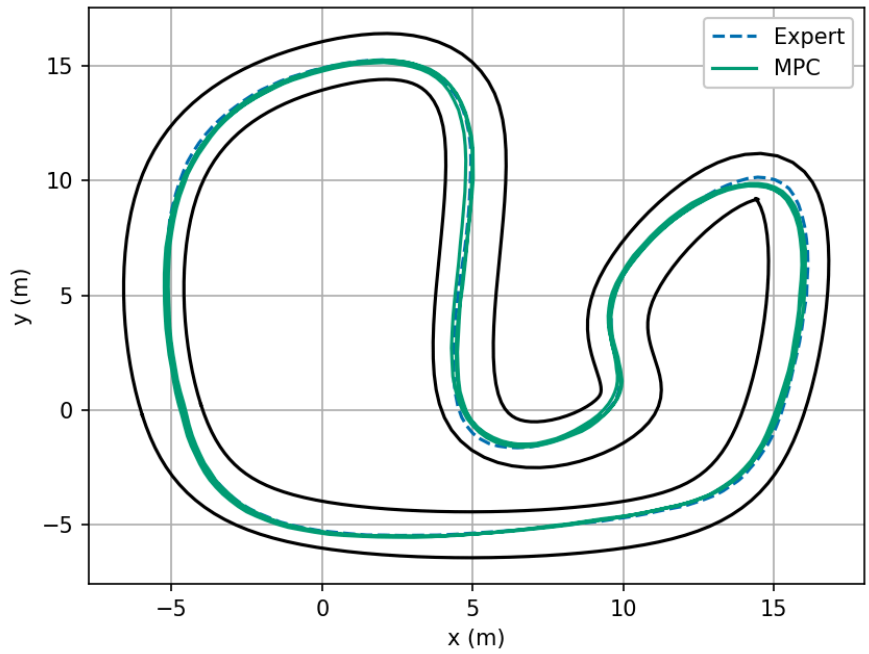
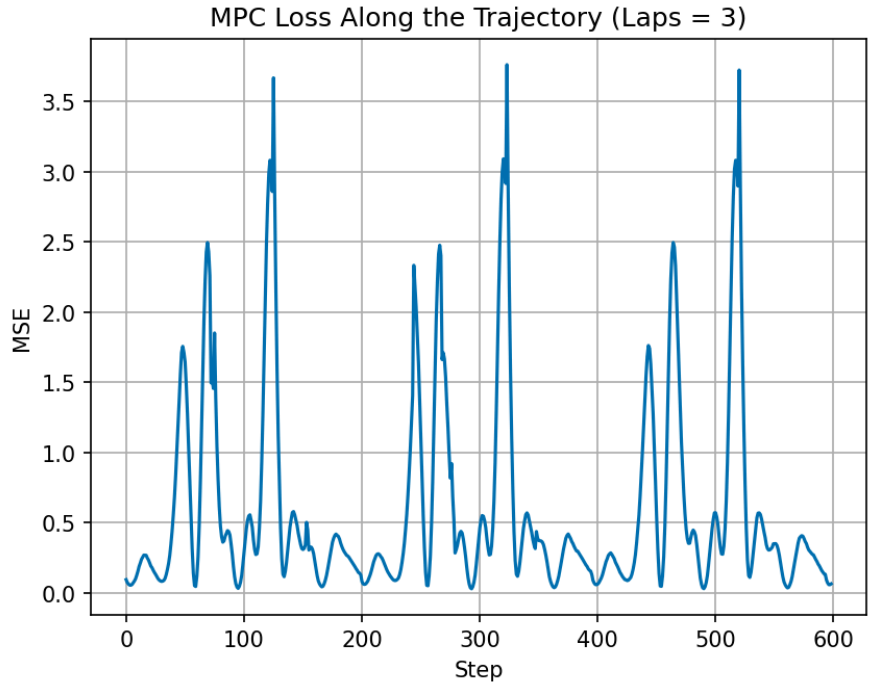
Task 1:

Plot of reference trajectory $\mathbf{x}_R(t)$ and controlled trajectory $\mathbf{x}(t)$.

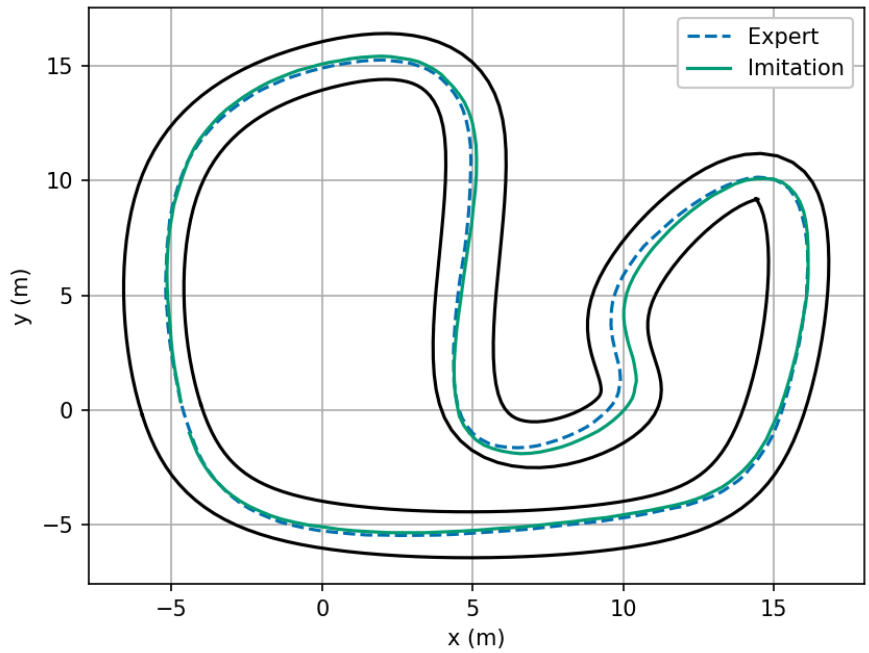


Plot of loss associated with controlled trajectory $\mathbf{x}(t)$ relative to reference trajectory $\mathbf{x}_R(t)$.

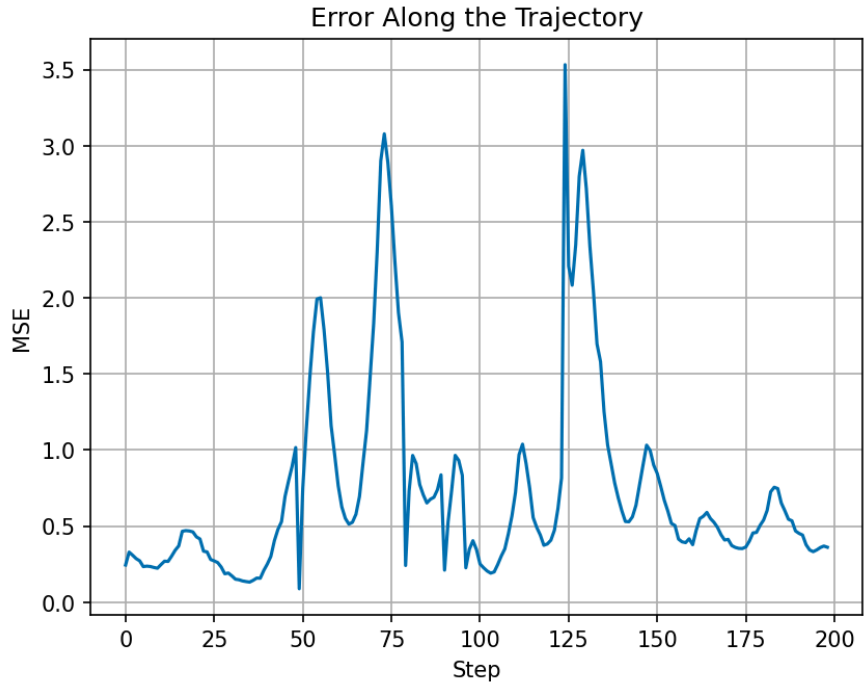


Task 2:

Plot of reference trajectory $\mathbf{x}_R(t)$ and controlled trajectory $\mathbf{x}(t)$.



Plot of loss associated with controlled trajectory $\mathbf{x}(t)$ relative to reference trajectory $\mathbf{x}_R(t)$.



Choice of parameterization and loss.

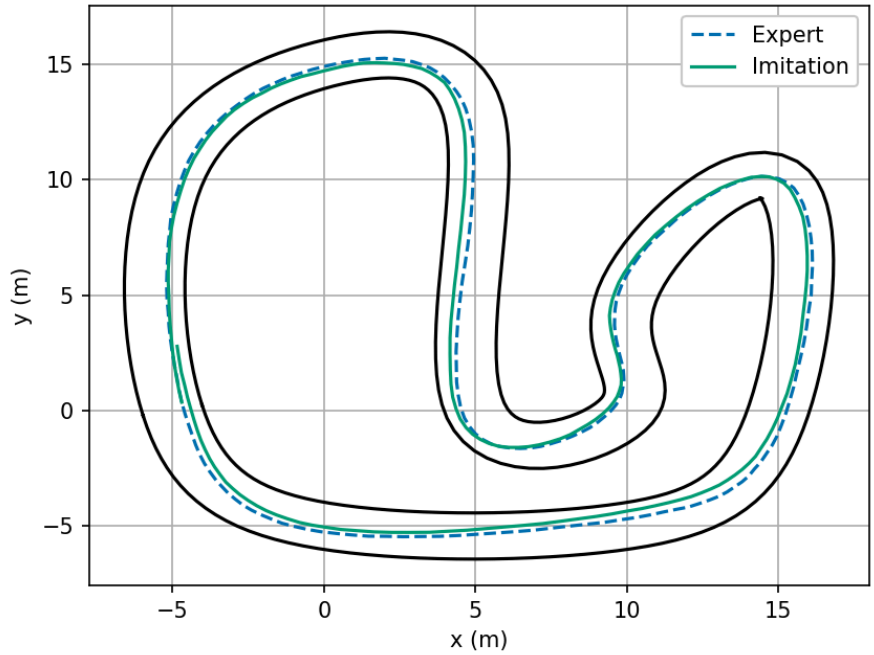
We chose to use a linear model and mean squared loss.

Choice of training set. Explain choice in one paragraph.

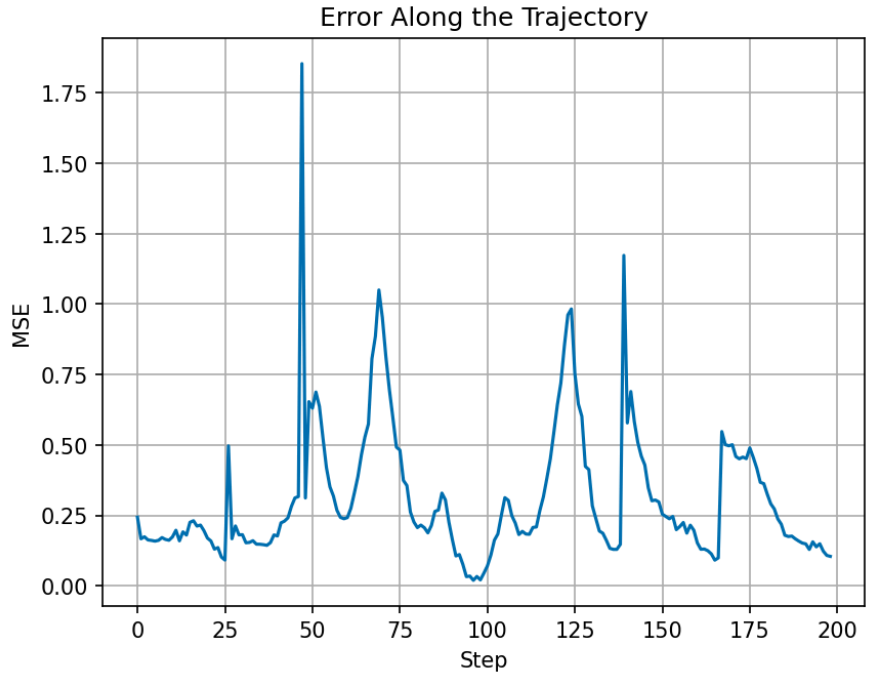
We chose to use dithering to generate the training set. Dithering was good because it was easily generatable from the expert trajectories. Also, since trajectories in the true system won't vary too much, simply adding noise to generate new datasets works well.

Task 3:

Plot of reference trajectory $\mathbf{x}_R(t)$ and con- trolled trajectory $\mathbf{x}(t)$.



Plot of loss associated with controlled trajectory $\mathbf{x}(t)$ relative to reference trajectory $\mathbf{x}_R(t)$.



Choice of parameterization: linear parametrization

Choice of training set. Explain choice in one paragraph.

The training set is dithered again by normal noise with mean 0 and standard deviation 0.3. This choice helps with learning the deviation of MPC to minimize the error along the trajectory in general.