Assignment 4: Model-Based RL and Exploration

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NOTE: Please do **NOT** change the sizes of the answer blocks or plots.

1 Problem 1: Dynamics Model Training – [10 points total]

Theory questions

The third model performs the best, because it achieves the least $MPE = 0.07804489$.
More training steps per iteration improves convergence a lot, and larger MLP interpolates better.

Plot

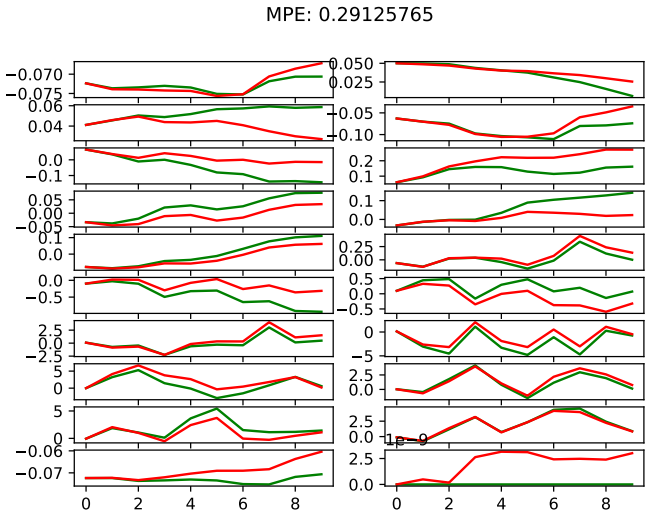


Figure 1: 500 training steps per iteration, 1 x 32 MLP.

Plot

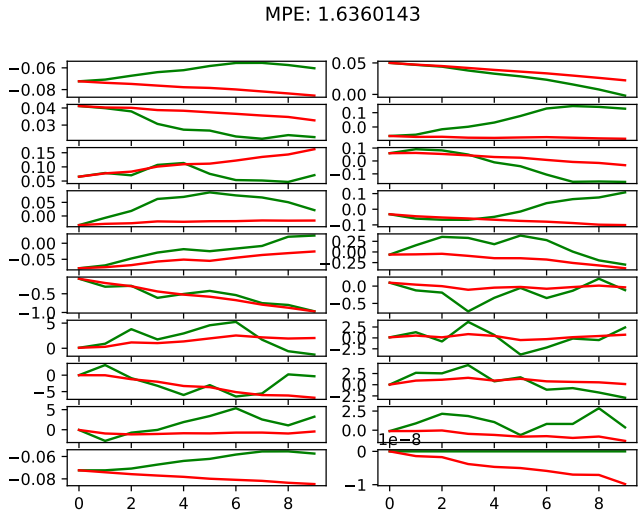


Figure 2: 5 training steps per iteration, 2 x 250 MLP.

Plot

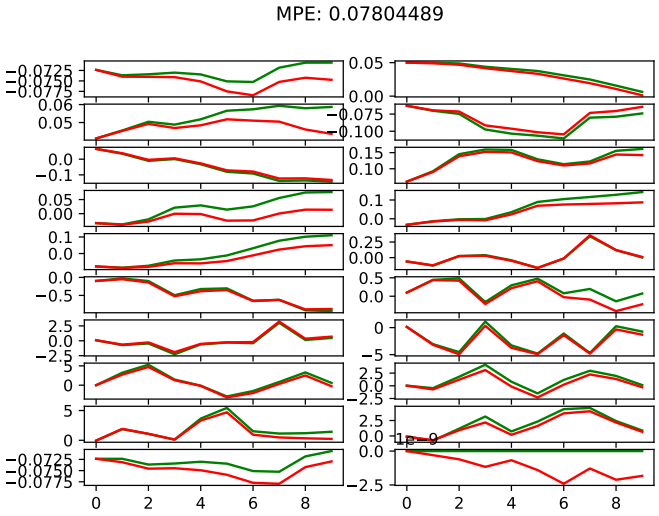


Figure 3: 500 training steps per iteration, 2 x 250 MLP.

2 Problem 2: Action Selection

Plot

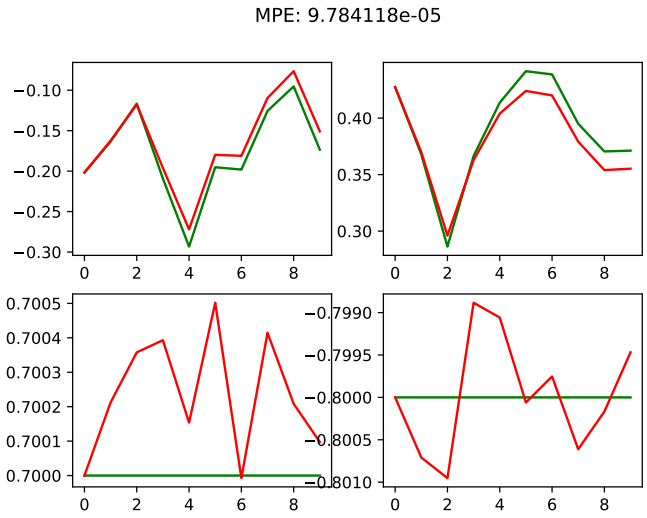
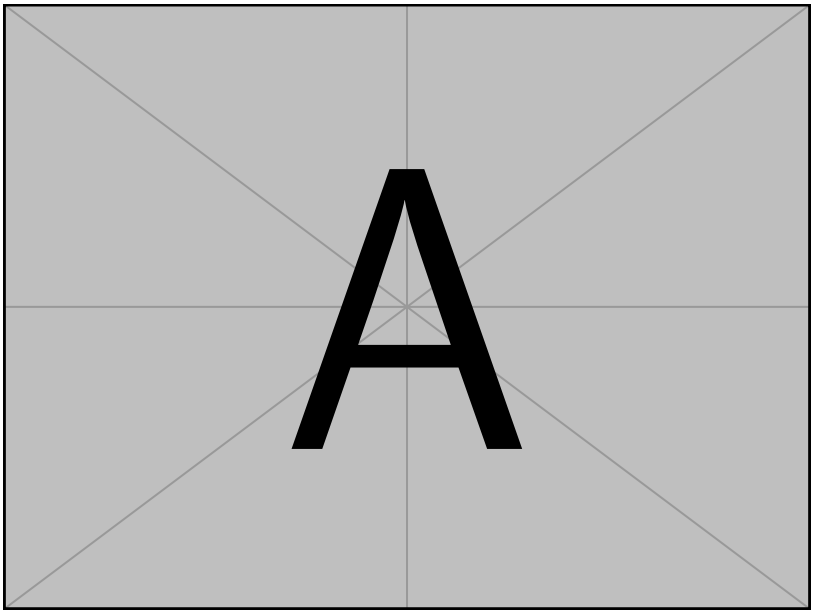


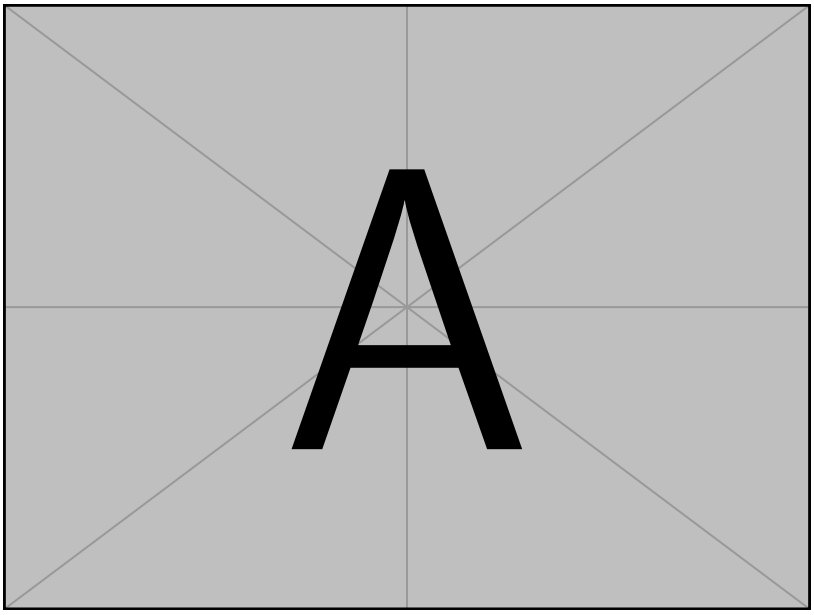
Figure 4: Optimizing the Dynamics Model where MPC needs to be used improves a lot.

3 Problem 3: Iterative Model Training

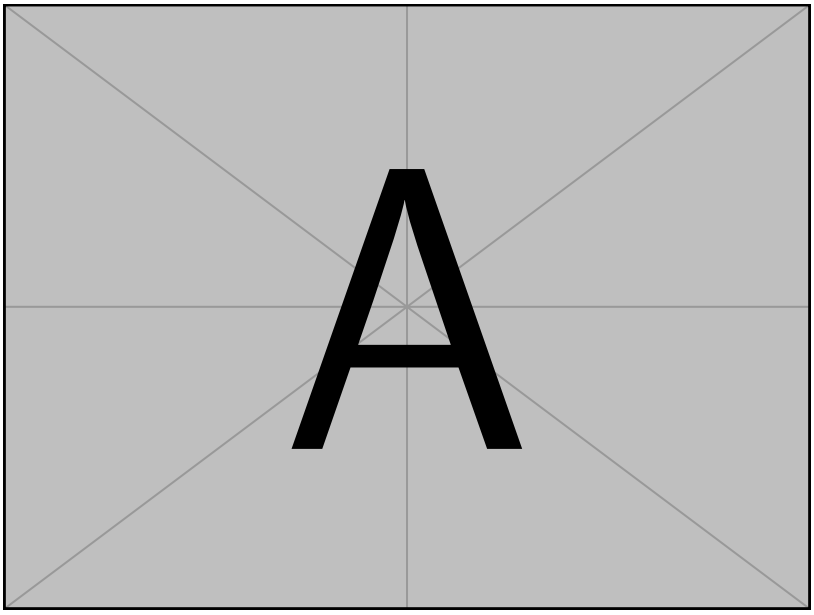
Plot



Plot

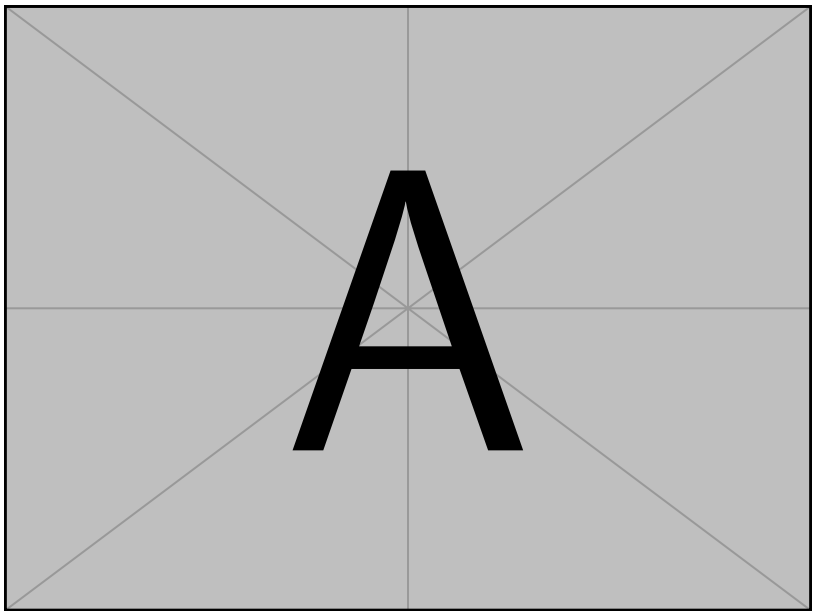


Plot

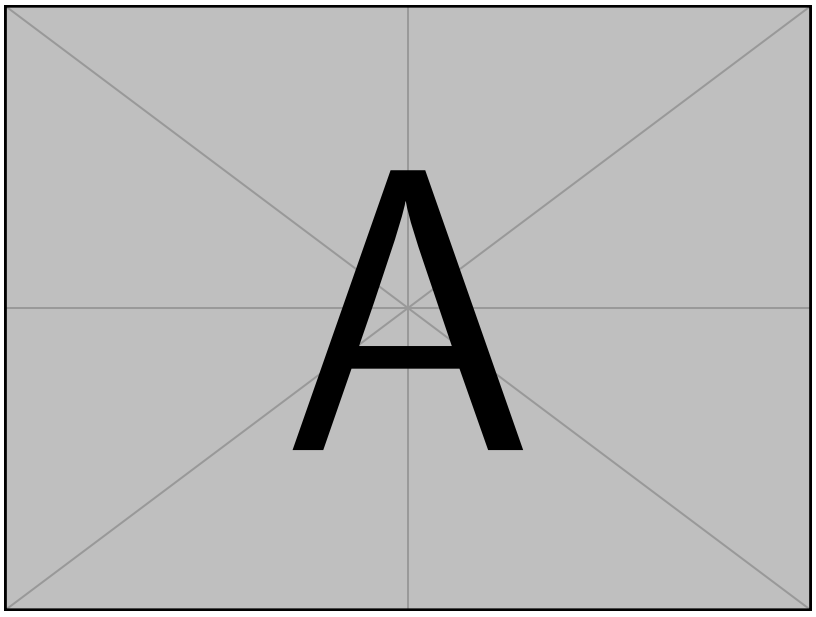


4 Problem 4: Hyper-parameter Comparison

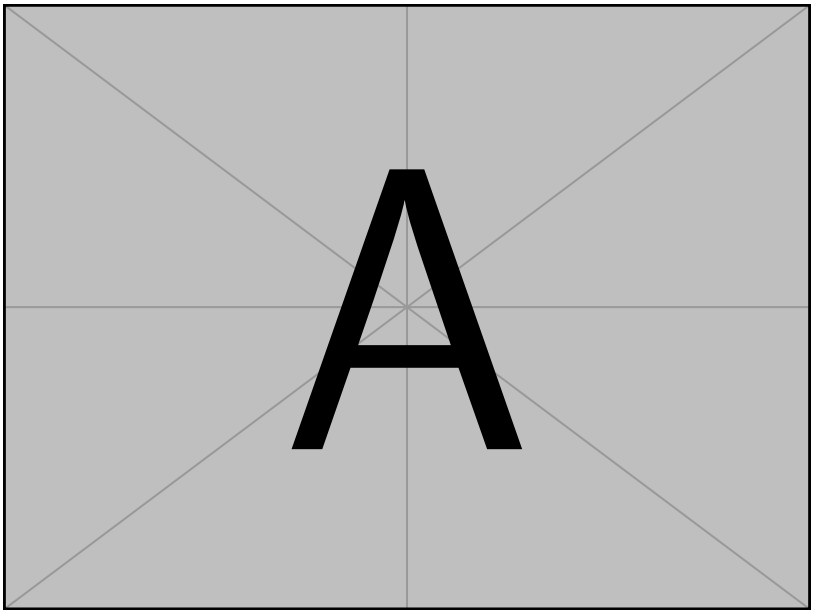
Plot



Plot

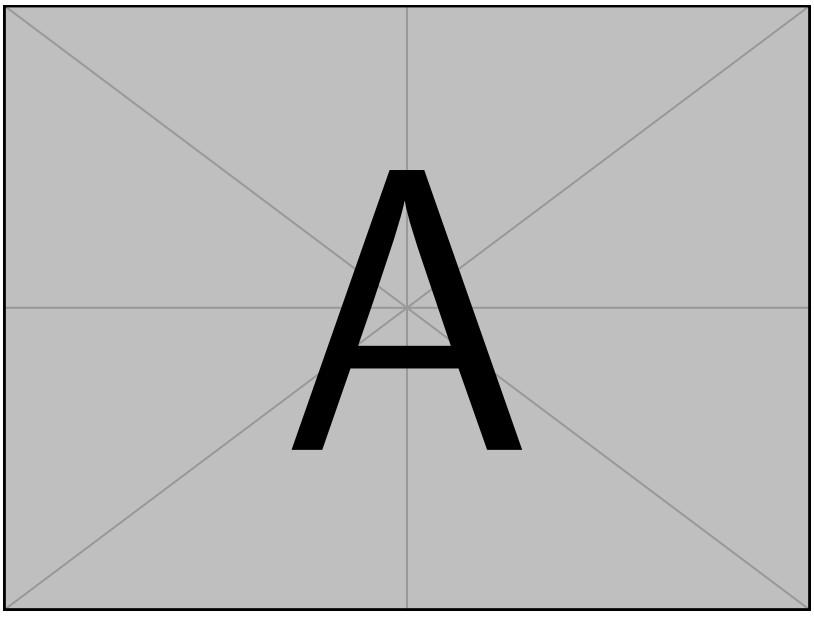


Plot



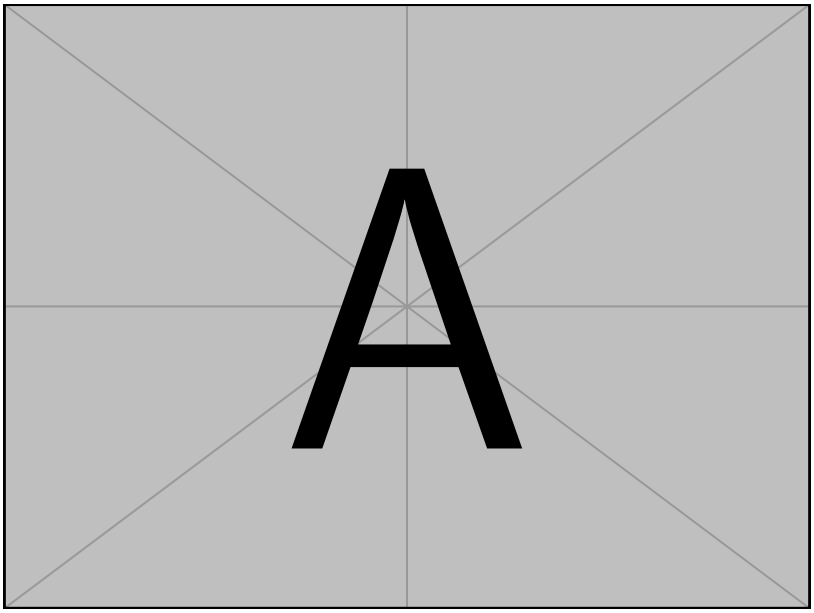
5 Problem 5: Hyper-parameter Comparison (Bonus)

Plot

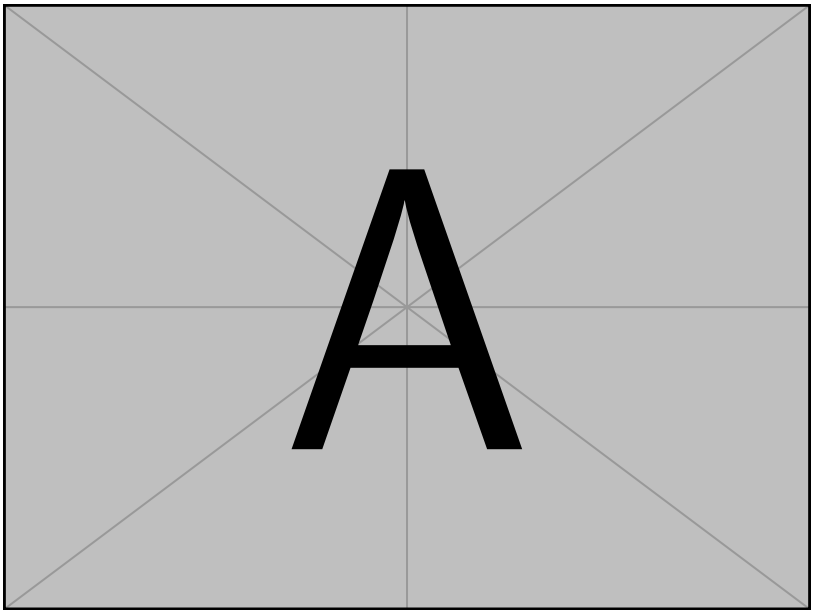


6 Problem 6: Exploration (Bonus)

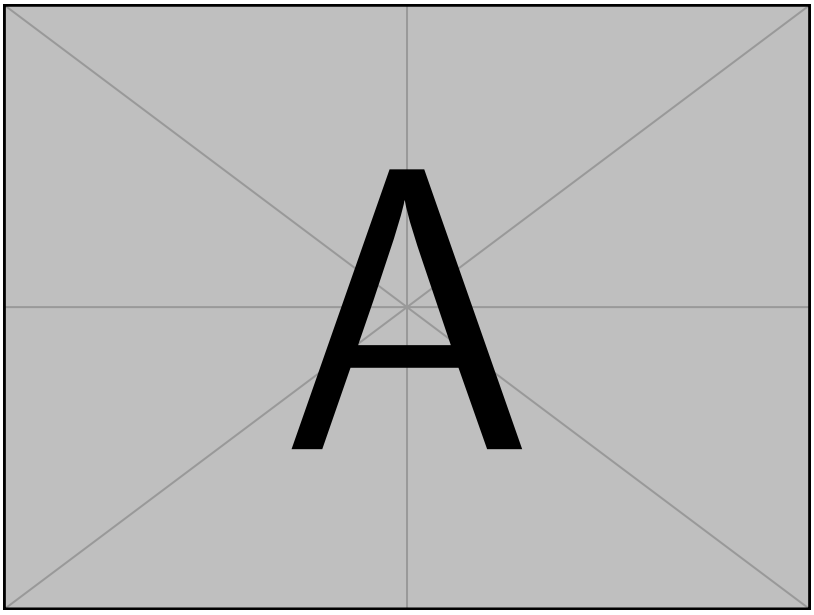
Plot



Plot



Plot



Plot