CSCE 790 Neural Networks and Their Applications Exam Report

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Question 2 (Model Identification)

Example 1
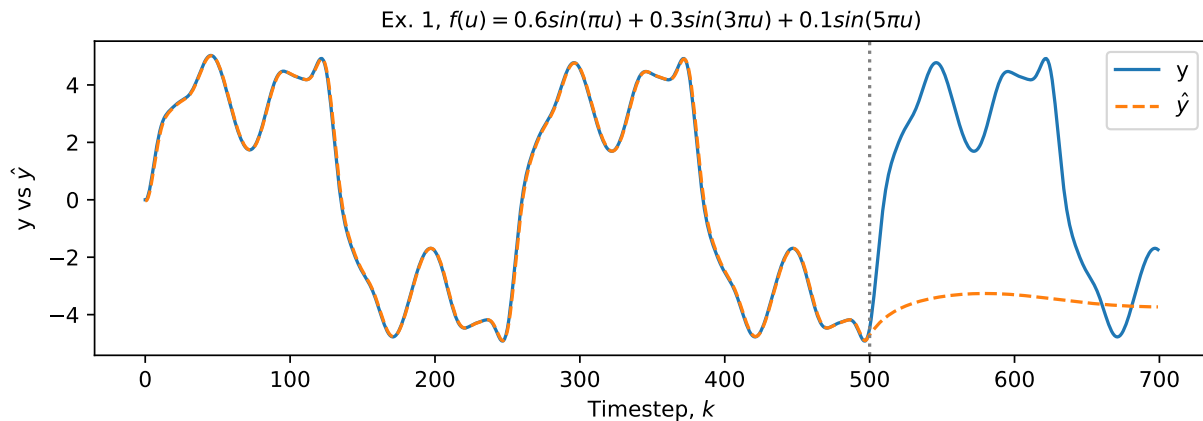
The simulation in example 1 is implemented here.

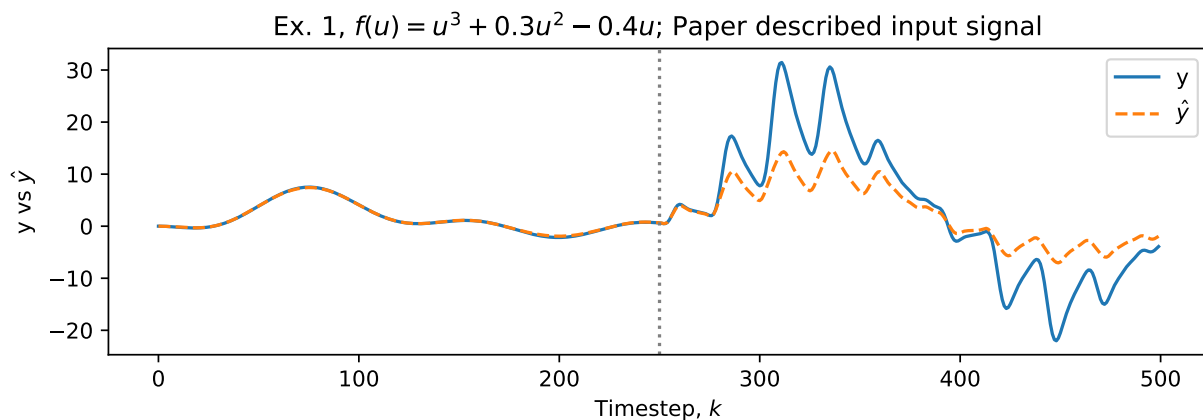Figure 1: Example 1, Plant vs learned NN, training stopped at k = 500

Figure 2: Example 1, Plant vs learned NN after training with random input for 50000 iterations. Note that the second half of the plant output amplitude is not properly predicted by the model. This is due to input signal range being (-2, 2) while training was done on range (-1, 1)
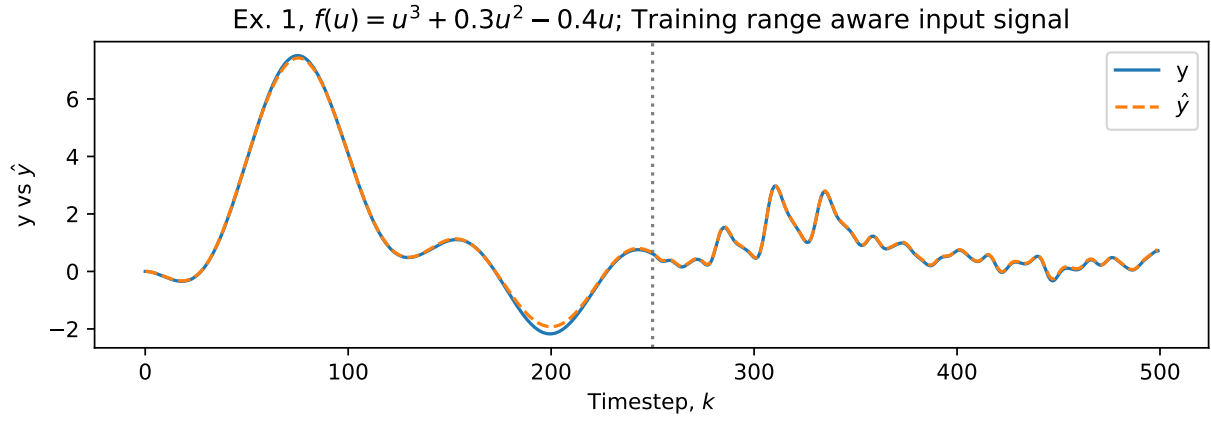
Figure 3: Example 1, Plant vs learned NN after training with random input for 50000 iterations. Input signal has been modified to match training range

Example 3

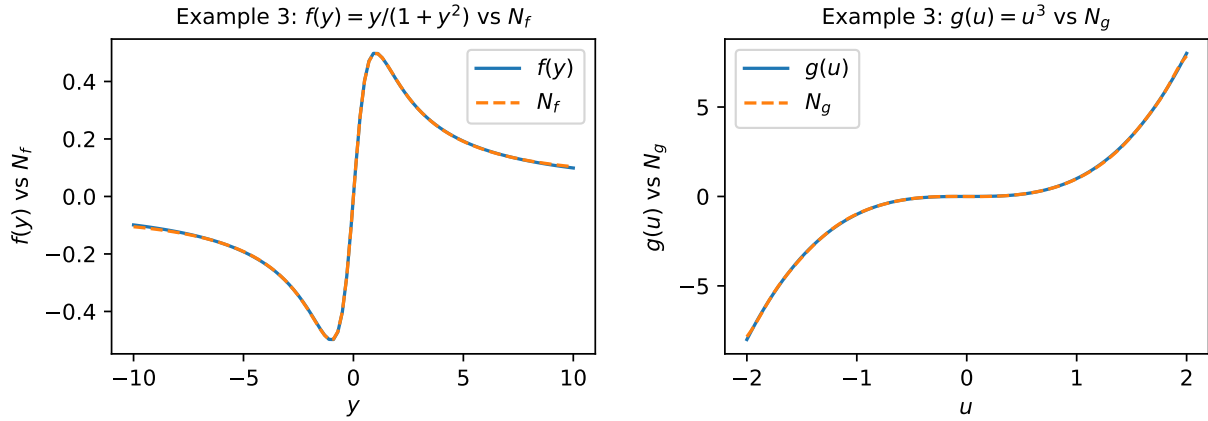The simulation in example 3 is implemented here.

Figure 4: Example 3, Plot of functions f and g with respect to neural networks
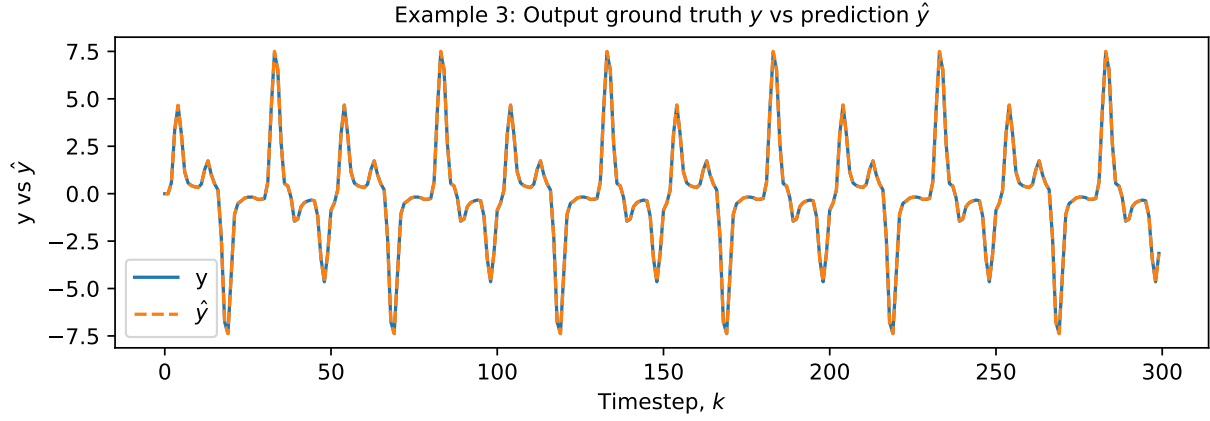
Figure 5: Example 3, Plot of plant output with respect to the identified model

Question 3 (Model Identification and Dynamic Control)

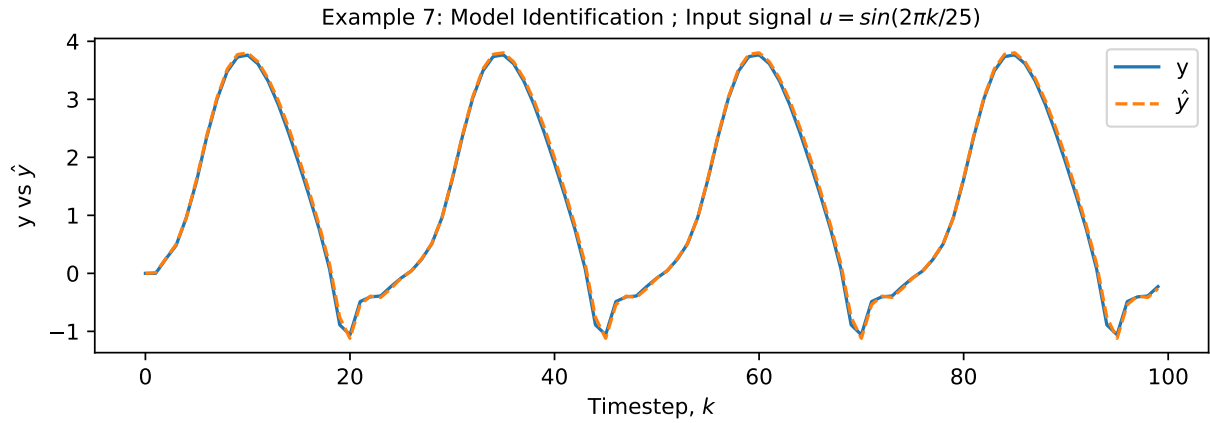The simulation in example 7 is implemented here. I have only done the first stage.

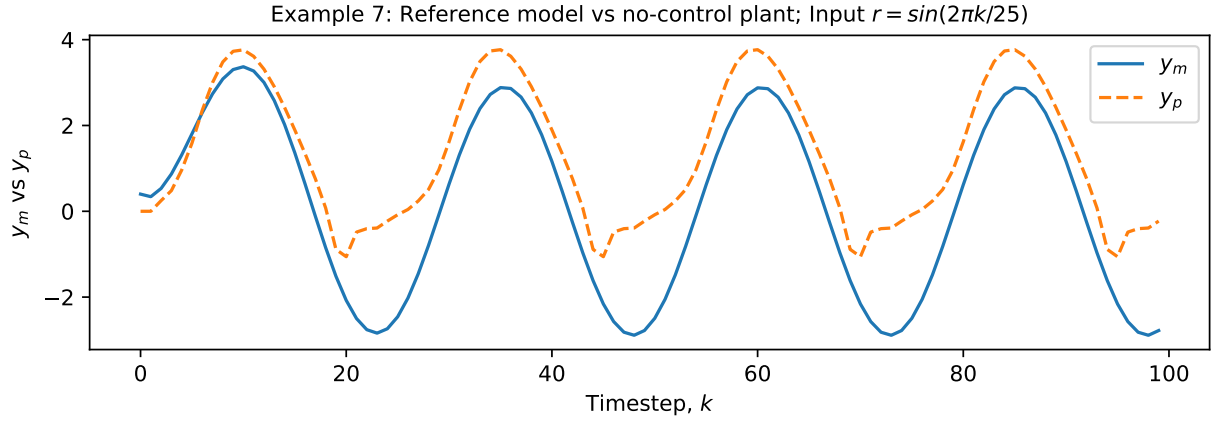Figure 6: Example 7, Model identification using technique described in example 2

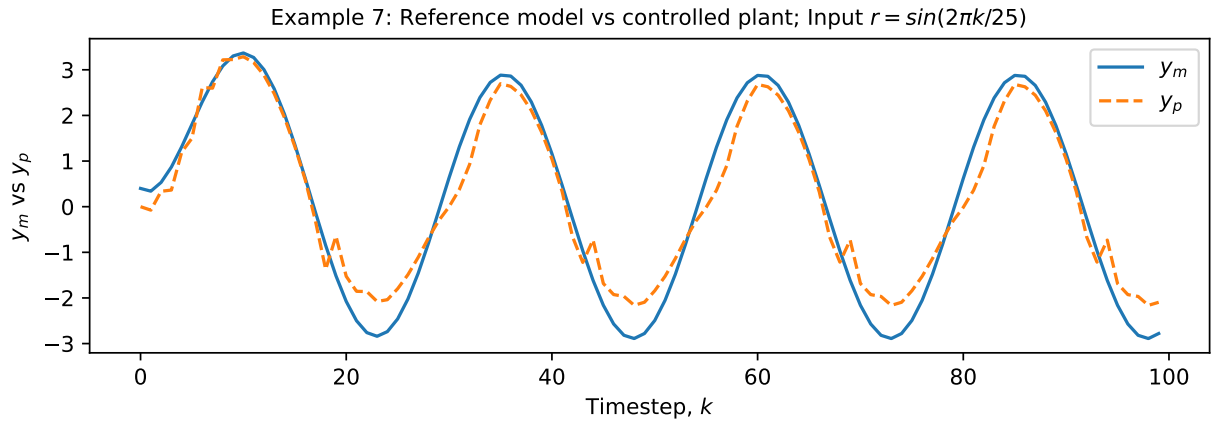Figure 7: Example 7, Reference model output compared to no-control plant

Figure 8: Example 7, Reference model output compared to plant with adaptive control