Indian Institute of Science

E9-252: Mathematical Methods and Techniques in Signal Processing

Instructor: Shayan G. Srinivasa

Home Work #4, Fall 2015

Late submission policy: Points scored = Correct points scored $\times e^{-d}$, d = # days late

Assigned date: Nov 15th 2015 **Due date:** Nov 23rd 2015 in class

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PROBLEM 1: The file data.txt contains data from an unknown system that needs to be identified. It is known that the system has no more than four poles and zeros in total (i.e., $p + q \leq 4$) .

   (1) Obtain the transfer function via iterative prefiltering method. How many iterations does it take for the solution to converge? Sketch the convergence plot. Comment on the stability of the model.

   (2) Compare your solution in part (a) using Padé approximation. What can you conclude?

(100 pts.)

NOTE: Your report must include the original code along with your analysis/experimentation.