1.

This question trains a one-vs-rest polynomial kernel perceptron on polynomials of degrees such that over 20 iterations. From the training and testing functions, the program derives the training and testing errors and standard deviations for each polynomial degree .

Train Standard Deviations

0.0028100157448148395

0.002376631713456373

0.0019988908757994778

0.0022498917047259026

0.001983868744610059

0.0016783933339908563

0.0016029963496411606

Train Errors

0.15152594783543966

0.10606345791879539

0.09081742403872009

0.08409518687819306

0.08152729228287174

0.0794501210002689

0.07921484269965044

Test Standard Deviation

0.02659702741412829

0.010390784703391056

0.008583438990556934

0.006946259446015748

0.02664805704712137

0.006103038635577457

0.00465131449785794

Test Errors

0.10959677419354838

0.06631720430107527

0.05900537634408602

0.05169354838709676

0.056370967741935486

0.047419354838709675

0.04491935483870968