Asmt 5: Regression

Gopal Menon
Turn in through Canvas by 2:45pm:
Wednesday, April 12

1 Singular Value Decomposition (20 points)

First we will compute the SVD of the matrix A we have loaded

$$[U, S, V] = svd(A)$$

Then take the top k components of A for values of $k = 1$ through $k = 10$ using

$$Uk = U(:, 1:k)$$
$$Sk = S(1:k, 1:k)$$
$$Vk = V(:, 1:k)$$
$$Ak = Uk * Sk * Vk'$$

A: (10 points) Compute and report the L_2 norm of the difference between A and Ak for each value of k using

$$norm(A - Ak, 2)$$

Table 1: L_2 norm of the difference between A and Ak for each value of k

k	L_2 Norm
1	40.483
2	26.717
3	25.000
4	22.192
5	17.675
6	15.813
7	13.351
8	12.188
9	9.1206
10	9.0000