M350
Fall 2008

Quiz 9

Name:_____

You may work together. Your solutions will be due next Thursday, April 17th, at the **beginning** of class. Late papers will receive 10 points off.

1. Modify the linear interpolation problem, using `edmInterp1.m` as a template, to do the interpolation using a single center. Does the plot look like a plane- Is this really **linear** regression? Hint: Think about how you would write this function down.

2. We asked in class how going from the EDM to a nonlinear function of the EDM effects the eigenvalues- Most of the nonlinear functions changes the smallest eigenvalue by quite a bit, but one of them changes it only slightly. Modify the code sample for Exercise 3, p. 176 to compare the linear v. nonlinear matrix eigenvalues, and find which nonlinearity changes the smallest eigenvalue the least. Use `rbf1.m` for the nonlinearity.

3. Exercises 3-6, p. 179

4. Use `edmInterp2.m` to illustrate how changing the width of the Gaussians will change the regression problem (that is, use $\phi(r) = \mathrm{e}^{-r^2/\sigma^2}$ for different values of σ. Use `rbf1.m` in your modification.

5. Download and run `rbfError2d.m` to see what the effect is of adding too many centers to the RBF model.