# Model Order Selection. In-class Exercise 1

*EL-GY 6143 Intro Machine Learning. Prof. Sundeep Rangan*

## Question

Complete the following items in the demo, demo_polyfit.ipynb.

**In-class Exercise** To inspire you think about a possible way to find the correct model order, modify the above code to do the following:

- Generate a *new* set of 100 data points, `xnew`, in the interval `[-1,1]`. You can use the `np.random.uniform()` `np.linspace()` function. You will need to look up their syntax.
- Compute corresponding labels for the points, `ynew = poly.polyval(xnew,beta)`. These would be the labels of the *true* function without noise corresponding to the inputs `xnew`.
- For each model order, `d`: find the parameters `beta_hat` from `(xdat,ydat)` as before.
- But, measure the RSS on the new data `(xnew,ynew)`.
- Plot the RSS on the new data.
- Which model order produces the minimum RSS when measured on the new data?

Of course, you cannot implement this procedure in reality, since it requires that you get another 100 data points without noise. But, we will see how to implement a good approximation of this procedure.