CS584 Final Project: Proposal

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1. **Problem Statement**

In the last few decades, the CS prediction of concrete has attracted the interest of many researchers due to the uncertainty and complexity of materials mixture. Conventional modeling and prediction schemes fail to estimate the concrete behavior due to mixtures nonlinearity and time consuming testing of material samples. Adaptive systems such as neural networks (NN) and kernel ridge regression (KRR) are very intelligent and computationally effective tools for predicting nonlinear behavior. So I will use these two techniques to deal with the prediction.

1. **Methods Plan to Use**

* Kernel ridge regression
* Neural networks

1. **Dataset**

* Name: Concrete\_Data.xls
* Source: <https://archive.ics.uci.edu/ml/machine-learning-databases/concrete/compressive/>
* Data Characteristics:

The actual concrete compressive strength (MPa) for a given mixture under a specific age (days) was determined from laboratory. Data is in raw form (not scaled).

Summary Statistics:

Number of instances (observations): 1030

Number of Attributes: 9

Attribute breakdown: 8 quantitative input variables, and 1 quantitative output variable

Missing Attribute Values: None

1. **Reference:**

[1] Predicting the Compressive Strength of Concrete using Neural Network and Kernel Ridge Regression; Muhammad Amir Shafiq; 2016,12; FTC 2016 - Future Technologies Conference 2016 6-7 December 2016