PREDICTING WEEKLY PEAK EXCHANGE RATE
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DATA
- 15 years of daily USD to Kenya Shilling exchange rate
- Annual Inflation rate, Purchasing Power Parity, External Debt, Balance on Trade and Services, Interest Rates for past 15 years
- Trained on 70% of data and used 30% for cross validation

REPRESENTATION 1
Regressed on sliding seven day data window. Target variable was exchange rate for day at end of window
LINEAR REGRESSION
Performance Metrics:
  - Generalization Error - 79.58%
  - Average difference - 0.78
Confusion Matrix

LOCALLY WEIGHTED LINEAR REGRESSION

\[ w(i) = e^{-(\frac{(x-x_0)^2}{\gamma} - \frac{y-y_0)^2}{m})} \]

where \( \gamma = \) closeness factor
\( m = \) number of training samples

Performance Metrics:
  - Best \( \tau = 12.00 \) Best closeness = 10
  - Best \( \tau , \) closeness pair = (10, 10);
  - Generalization Error - 75.07%
  - Average difference - 1.42

REPRESENTATION 2
Data divided into 7 day features with target variable being the day, \( d, \) within the week with peak exchange rate. \( d = [0, 1, \ldots, 5, 6] \)

MODELS
MULTICLASS SVM
- Used one versus the rest approach
- Linear Kernel
- Performed regularization by varying C

  - Performance plateaued at 27.86% accuracy
  - Including non-exchange rate data decreased performance.
  - **Inflation and Balance of Goods and Services**, chosen from feature selection.
  - Performance - **27.4% accuracy**

Confusion Matrix

SOFTMAX REGRESSION
- Obtained 24% accuracy on testing set