Machine Learning Final Report

Chung-Yen Hung B00201015

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1.1 First time commit

1. **Algorithm**:
   (a) *Logistic Regression:*
   params:
   C = 1.0, class_weight = None, dual = False, fit_intercept = True, intercept_scaling = 1, penalty = "L2"
   track 0: E_out: 0.82
   (b) *Ridge Regression:*
   params:
   alphas=array[0.1, 1., 10.], class_weight = None, cv = None, fit_intercept = True, loss_func = None, normalize = False
   track 0: E_out: 0.87
   (c) *Random Forset:*
   params:
   number of tree: 100
   track 0: E_out: 0.72
2. **Feature Extraction**:
   (a) Hog[TODO]
3. **Resize Class**:
   Resize class 32 to 22
   let **大寫數字** class = **小寫數字** class
4. Grid Search
   (a) *Random Forset*
   number of tree = [10, 20, 30, 50, 60, 70, 80, 90, 100]

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2.1 Try SVM and Random Forset

1. **Algorithm**:
   (a) *Random Forset:*
   params:
   number of tree: 600, max_features: log2(n_features)
   track 0: E_out: 0.62

2. **Feature Extraction**:
   (a) HOG

3. **Resize Class**:
   Resize class 32 to 22
   let **大寫數字** class = **小寫數字** class

4. **Grid Search**:
   (a) *Random Forset*
   number of tree = [100, 200, 300, 400, 500, 600, 700, 800]
   (b) *SVM with kernel*
   parameters = [
   C:[1, 10, 100, 1000], kernel: [linear],
   C:[1, 10, 100, 1000], gamma: [0.001, 0.0001, 0.1, 0.01], kernel: [rbf],
   C:[1, 10, 100, 1000], degree: [2, 3, 4, 5], kernel: [poly],
   ]
   (c) *linear SVM*
   parameters = C:[0.1, 1, 10, 100, 1000], multi_class: [ovr, crammer_singer]