

Machine Learning Final Report

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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 (trying.....)

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

(b) *Random Forset: without resize class*

params:

number of tree: 800, max_features: log2(n_features)

track 0: E_out: 0.6

2. Feature Extraction:

(a) HOG (trying.....)

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]

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3.1 Using HOG feature on Random Forest

1. **Algorithm:**

(a) *Random Forest: with HOG Feature*

params:

number of tree: 800, max_features: sqrt (n_features)

track 0: E_out: 0.29

2. **Feature Extraction:**

(a) HOG

3. **Grid Search:**

(a) *Random Forest*

number of tree = [500, 600, 700, 800, 900, 1000]

max_features = [sqrt, log2]

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4.1 Start blending and bagging

1. Algorithm:

(a) *Random Forset: with HOG Feature*

params:

number of tree: 800, max_features: sqrt (n_features)

track 0: E_out: 0.29

(b) *SVM kernel: with HOG Feature*

params:

kernel: rbf, C: 100, γ : 0.1

track 0: E_out: 0.26

(c) *SVM linear bagging: with HOG Feature*

params:

C: 1

track 0: E_out: 0.27

2. Feature Extraction:

(a) HOG

3. Grid Search:

(a) *Linear SVM*

C = [0.01 , 0.5, 0.1, 10]

(b) *AdaBoost* C = [100 , 200, 300, 400, 500]

4. Blending:

(a) Random Forset

(b) SVM

(c) Linear SVM

(d) Logistic Regression

(e) Bagging Linear SVM