

**The Experiment Report of**

***Machine Learning***

**College Software College**

**Subject Software Engineering**

**Members 李焕童**

**Student ID 201530611944**

**E-mail 1779414343@qq.com**

**Tutor 谭明奎**

**Date submitted2017.12 .15**

1. **Topic:** Logistic Regression, Linear Classification and Stochastic Gradient Descent

**2. Time:** 2017.12 .9

**3. Reporter:李焕童**

**4. Purposes:**

1.Compare and understand the difference between gradient descent and stochastic gradient descent.

2.Compare and understand the differences and relationships between Logistic regression and linear classification.

3.Further understand the principles of SVM and practice on larger data.

**5. Data sets and data analysis:**

Experiment uses [a9a](https://www.csie.ntu.edu.tw/~cjlin/libsvmtools/datasets/binary.html#a9a) of [LIBSVM Data](https://www.csie.ntu.edu.tw/~cjlin/libsvmtools/datasets/), including 32561/16281(testing) samples and each sample has 123/123 (testing).But the testing data loses its 123th column.

**6. Experimental steps:**

**7. Code:**

Logistic Regression:

Linear Classification:

(Fill in the contents of 8-11 respectively for logistic regression and linear classification)

**8. The initialization method of model parameters:**

Logistic Regression:

Linear Classification:

**9.The selected loss function and its derivatives:**

Logistic Regression:

Linear Classification:

**10.Experimental results and curve:**(Fill in this content for various methods of gradient descent respectively)

Logistic Regression:

## Hyper-parameter selection:

## Predicted Results (Best Results):

## Loss curve:

Linear Classification:

## Hyper-parameter selection:

## Predicted Results (Best Results):

## Loss curve:

**11. Results analysis:**

Logistic Regression:

Linear Classification:

**12. Similarities and differences between logistic regression and linear classification：**

**13.Summary:**