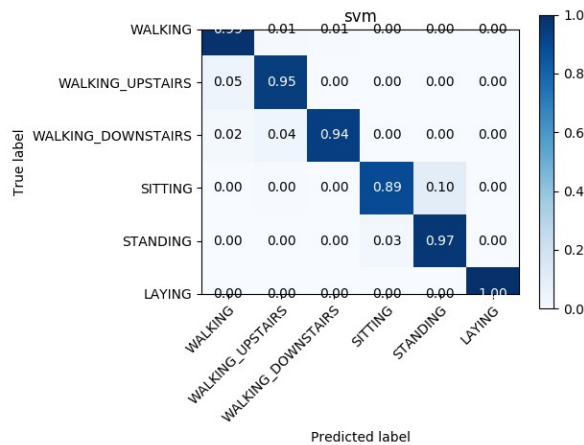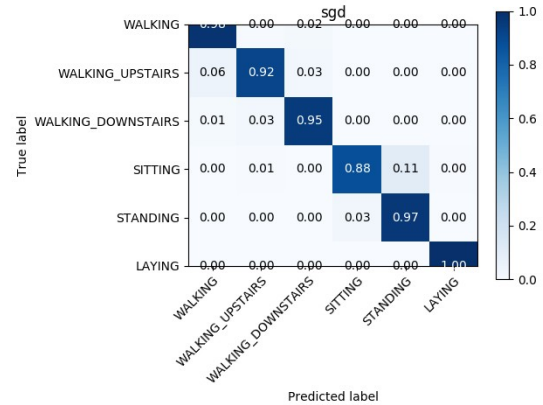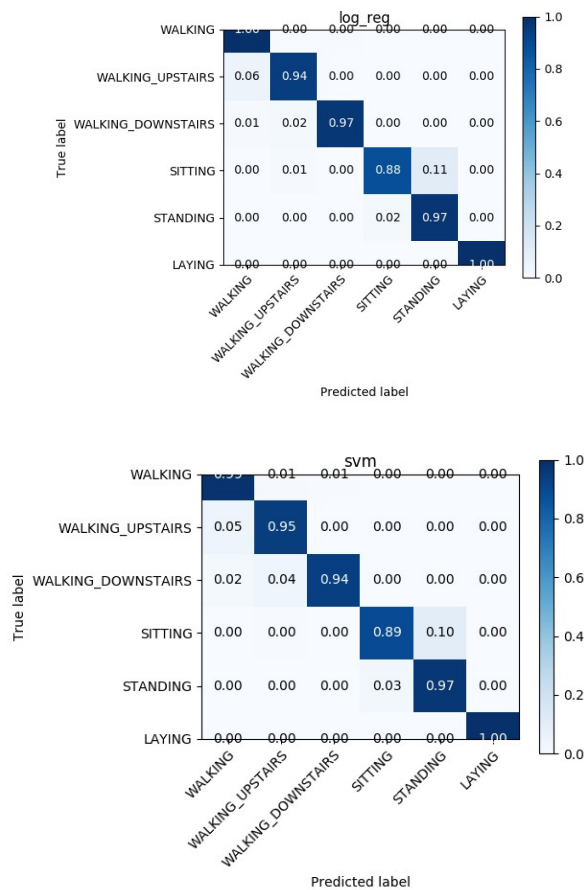# Homework Report

0. General

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All these results were achieved at seed = 5

Model	Exec time (sec)	Accuracy (%)
Logistic Regression (LR)	*293.247*	96.132
Stochastic Gradient (SGD)	*55.996*	95.860
Support Vector Machines (SVM)	*53.299*	95.792

1. Description of the results.

These three methods achieved a very good result, the accuracy of all of them is greater than 95%. From the confusion matrix, we can also see that in most cases our models predict correct class.

Interesting point is that all models make mistakes on classifying sitting and standing, probably that is because human acts similar in these situations.

Logistic Regression shows "*ConvergenceWarning: lbfgs failed to converge. Increase the number of iterations.*", I ignored these warnings because we had strict requirement to set number of iterations to 500.

I also added commands `ax.get_ylim()` and `plt.savefig()` to save confusion matrices in the files and be able to see them in a beautiful way.

2. Which model you think is better.

All models are very good for this particular problem. Their accuracy does not differ so much (max difference is 0.34%). Model that has the best accuracy is Logistic Regression, but its execution time is quite big.

3. Which model takes more time.

Logistic Regression takes much more time (5 times more than others).

4. The feasibility of precision and recall in this case.

We can also use precision and recall for the problem. But it is not necessary because the dataset is balanced and accuracy is enough metric for balanced datasets.