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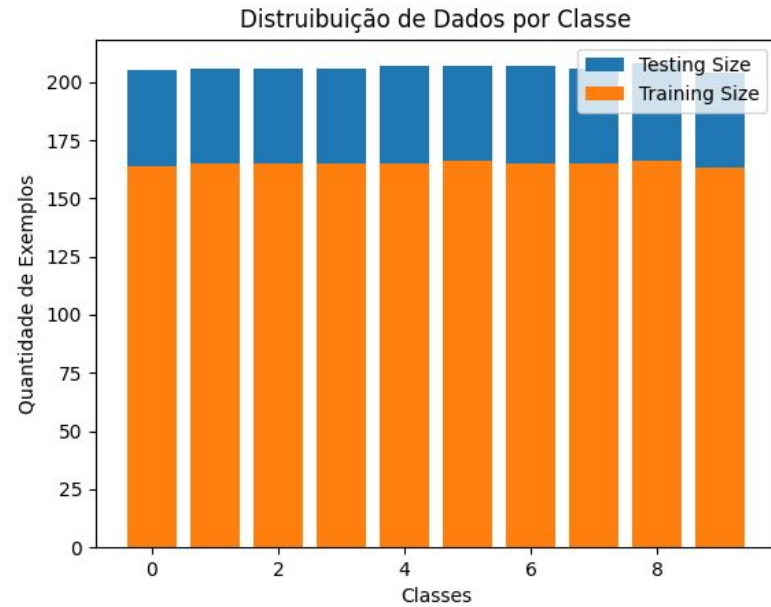
TAA @ DETI UA – 2019/2020

Professora: Petia Georgieva

Machine Learning

Sign Language Understanding

Os Dados



Exemplos Número 1

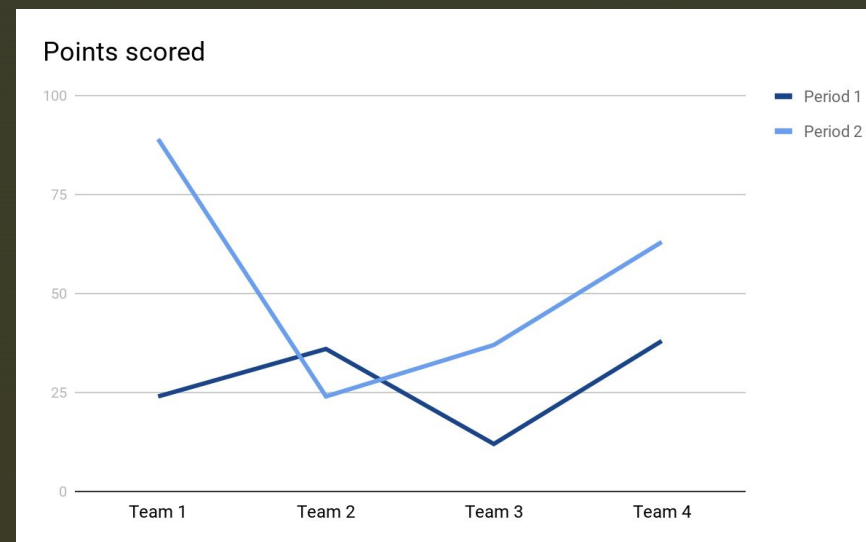


Exemplos Número 0





Considerações



tamanho: 64 x 64;
espaço de cores: cinza;
formato do ficheiro: npy
numero de classes: 10
numero de participantes: 218
numero de exemplos por participante: 10

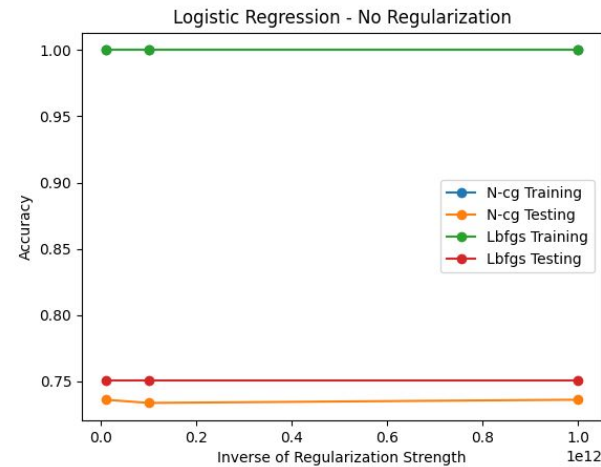
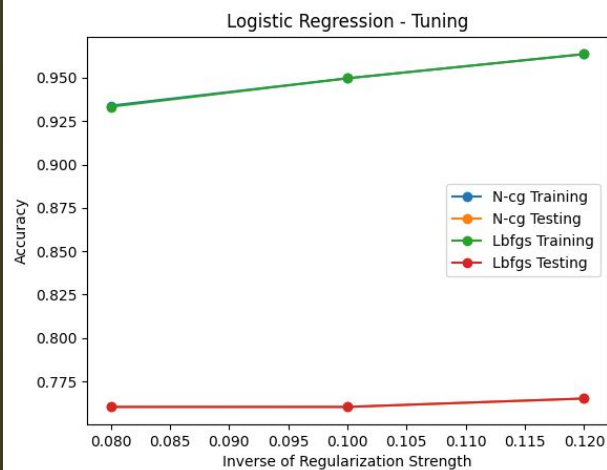
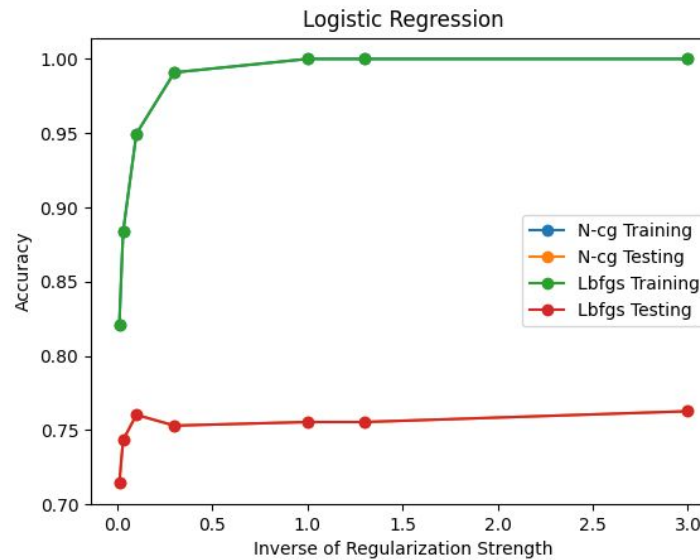
Logistic Regression

```
sklearn.linear_model.LogisticRegressionCV
```

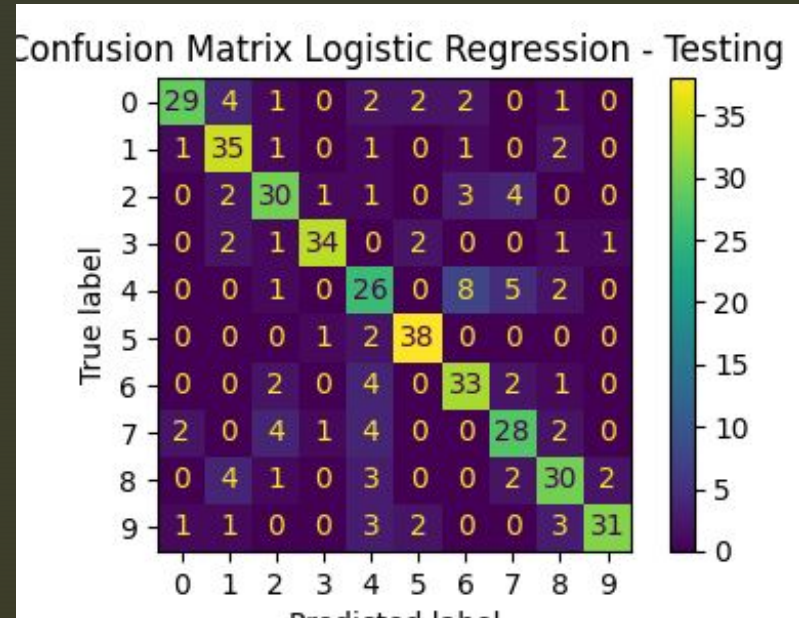
```
solver : {'newton-cg', 'lbfgs', 'liblinear', 'sag', 'saga'}, default='lbfgs'
```

```
penalty : {'l1', 'l2', 'elasticnet'}, default='l2'
```

```
cv : int or cross-validation generator, default=None
```



Logistic Regression



	precision	recall	f1-score	support
0	0.88	0.71	0.78	41
1	0.73	0.85	0.79	41
2	0.73	0.73	0.73	41
3	0.92	0.83	0.87	41
4	0.57	0.62	0.59	42
5	0.86	0.93	0.89	41
6	0.70	0.79	0.74	42
7	0.68	0.68	0.68	41
8	0.71	0.71	0.71	42
9	0.91	0.76	0.83	41
accuracy			0.76	413

train accuracy: 0.9496664645239539
test accuracy: 0.7602905569007264

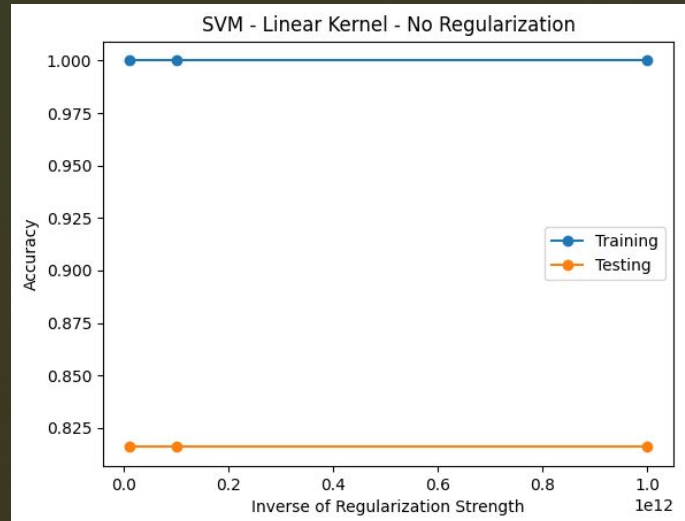
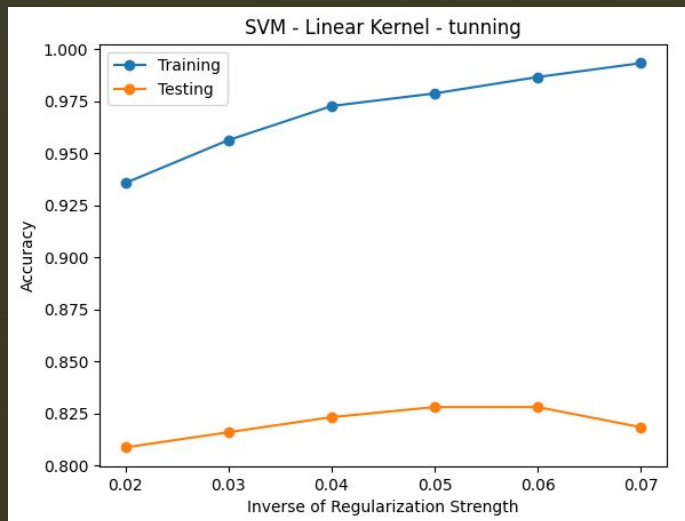
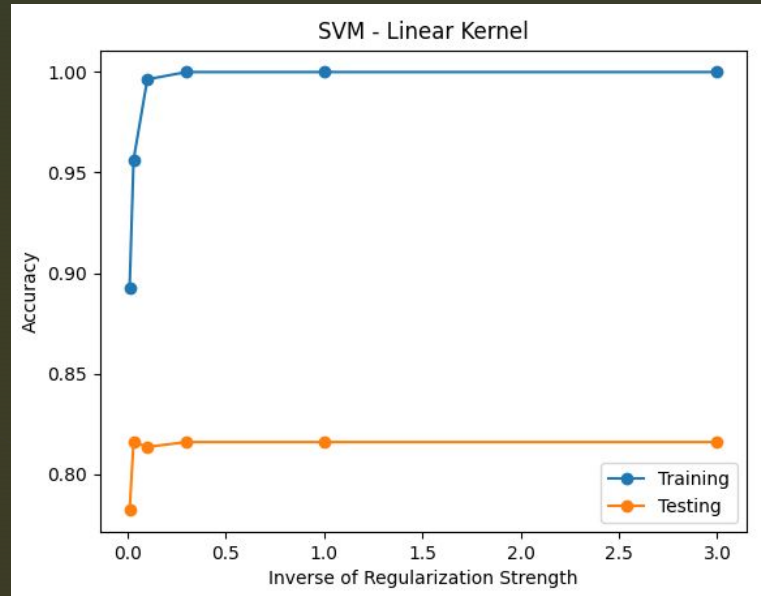
SVM – Linear Kernel

`sklearn.model_selection.GridSearchCV`

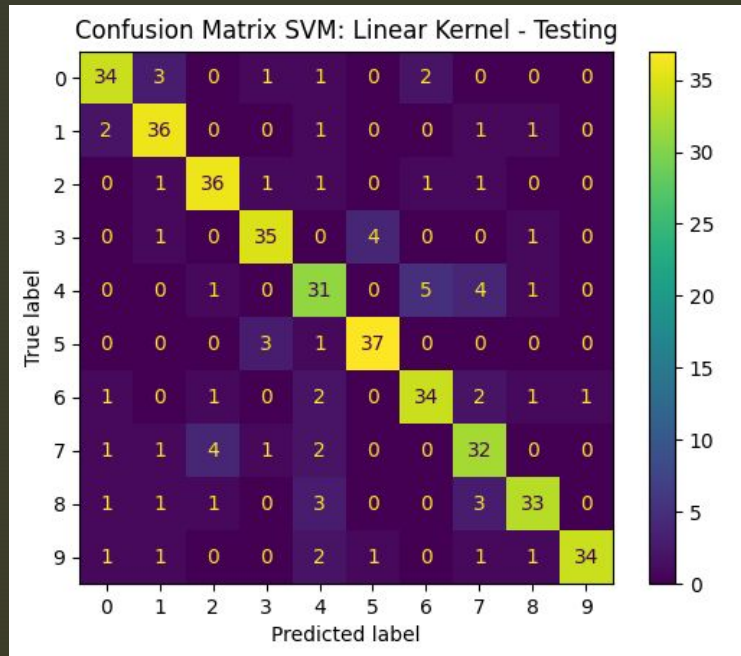
`sklearn.svm.SVC`

C : float, optional (default=1.0)

kernel : string, optional (default='rbf')



SVM – Linear Kernel



	precision	recall	f1-score	support
0	0.85	0.83	0.84	41
1	0.82	0.88	0.85	41
2	0.84	0.88	0.86	41
3	0.85	0.85	0.85	41
4	0.70	0.74	0.72	42
5	0.88	0.90	0.89	41
6	0.81	0.81	0.81	42
7	0.73	0.78	0.75	41
8	0.87	0.79	0.82	42
9	0.97	0.83	0.89	41
accuracy			0.83	413

train accuracy: 0.9866585809581565

test accuracy: 0.8280871670702179

SVM – RBF Kernel

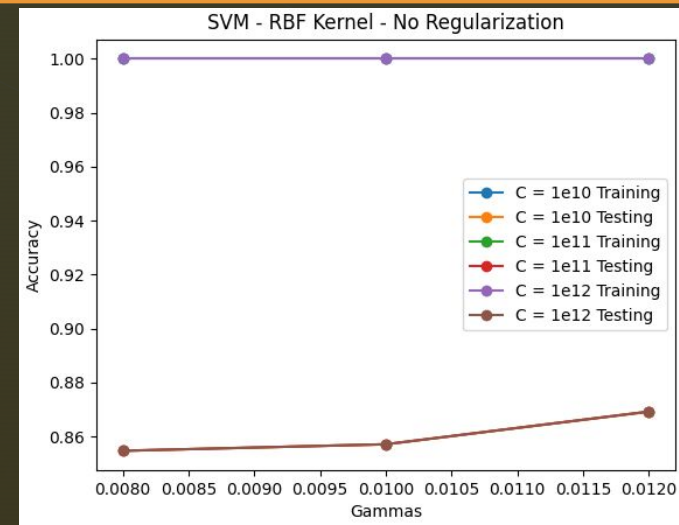
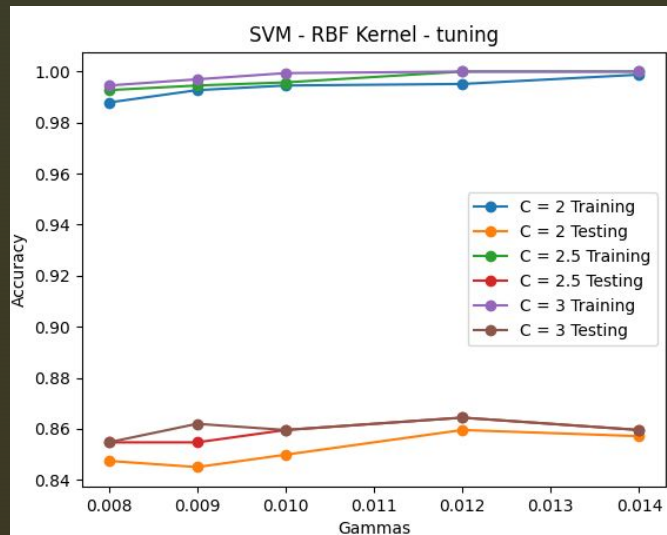
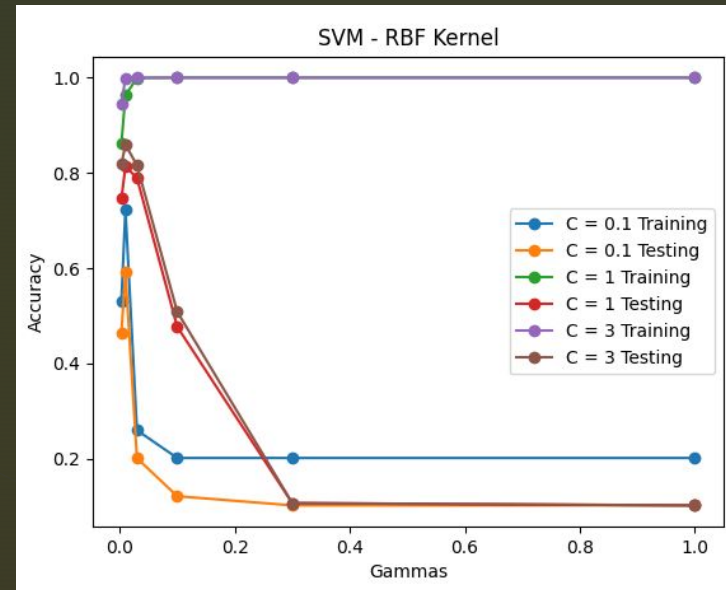
`sklearn.model_selection.GridSearchCV`

`sklearn.svm.SVC`

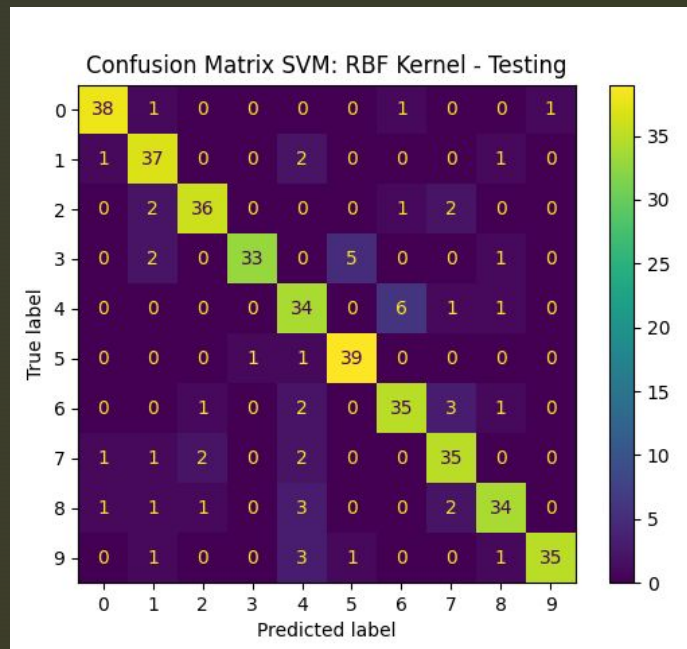
C : float, optional (default=1.0)

kernel : string, optional (default='rbf')

gamma : {'scale', 'auto'} or float, optional (default='scale')



SVM – RBF Kernel



	precision	recall	f1-score	support
0	0.93	0.93	0.93	41
1	0.82	0.90	0.86	41
2	0.90	0.88	0.89	41
3	0.97	0.80	0.88	41
4	0.72	0.81	0.76	42
5	0.87	0.95	0.91	41
6	0.81	0.83	0.82	42
7	0.81	0.85	0.83	41
8	0.87	0.81	0.84	42
9	0.97	0.85	0.91	41
accuracy			0.86	413

train accuracy: 0.9969678593086719

test accuracy: 0.8619854721549637

Conclusão

Principais Limitações
experiência
tamanho do dataset

	Logistic Regression	SVM - Linear Kernel	SVM - RBF Kernel	MLP	CNN
Testing Accuracy	0.76029055 69007264	0.82808 716707 02179	0.86198 547215 49637	0.77594 566345 21484	0.90799 0336418 1519