

## svm\_l2\_number\_of\_unzero\_coef

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```
In [7]: import numpy
        from models import svm

In [8]: X = numpy.loadtxt("./data/Train/X_train.txt")
        y = numpy.loadtxt("./data/Train/y_train.txt")

In [9]: C = [1e-4, 2e-4, 5e-4, 1e-3, 2e-3, 5e-3, 1e-2, 1e-1, 1, 1e1, 1e2]
        report = []
        for c in C:
            clf = svm.penalty_l2(X, y, c)
            non_zero = 0
            for coefi in clf.coef_:
                for coefij in coefi:
                    if(coefij > 1e-6):
                        non_zero += 1
            data = {
                'C': c,
                'non-zeros': non_zero
            }
            report.append(data)
        print("{} is completed".format(c))
```

```
0.0001 is completed
0.0002 is completed
0.0005 is completed
0.001 is completed
0.002 is completed
0.005 is completed
0.01 is completed
0.1 is completed
1 is completed
10.0 is completed
100.0 is completed
```

```
In [10]: report
```

```
Out[10]: [{'C': 0.0001, 'non-zeros': 3611},
           {'C': 0.0002, 'non-zeros': 3612},
```

```
{'C': 0.0005, 'non-zeros': 3612},  
{'C': 0.001, 'non-zeros': 3616},  
{'C': 0.002, 'non-zeros': 3625},  
{'C': 0.005, 'non-zeros': 3621},  
{'C': 0.01, 'non-zeros': 3618},  
{'C': 0.1, 'non-zeros': 3612},  
{'C': 1, 'non-zeros': 3643},  
{'C': 10.0, 'non-zeros': 3701},  
{'C': 100.0, 'non-zeros': 3769}]
```