svm_l1_number_of_unzero_coef

January 30, 2019

```python
In [1]: import numpy
        from models import svm

In [3]: X = numpy.loadtxt("./data/Train/X_train.txt")
        y = numpy.loadtxt("./data/Train/y_train.txt")

In [4]: 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_l1(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))
```

/home/mahdi/.local/share/virtualenvs/machine-learning-final-project-uk2p9d2v/lib/python3.6/site-
  "the number of iterations.", ConvergenceWarning)

0.0001 is completed

/home/mahdi/.local/share/virtualenvs/machine-learning-final-project-uk2p9d2v/lib/python3.6/site-
  "the number of iterations.", ConvergenceWarning)

0.0002 is completed

/home/mahdi/.local/share/virtualenvs/machine-learning-final-project-uk2p9d2v/lib/python3.6/site-
  "the number of iterations.", ConvergenceWarning)

```
0.0005 is completed


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    "the number of iterations.", ConvergenceWarning)


0.001 is completed


/home/mahdi/.local/share/virtualenvs/machine-learning-final-project-uk2p9d2v/lib/python3.6/site-
    "the number of iterations.", ConvergenceWarning)


0.002 is completed


/home/mahdi/.local/share/virtualenvs/machine-learning-final-project-uk2p9d2v/lib/python3.6/site-
    "the number of iterations.", ConvergenceWarning)


0.005 is completed


/home/mahdi/.local/share/virtualenvs/machine-learning-final-project-uk2p9d2v/lib/python3.6/site-
    "the number of iterations.", ConvergenceWarning)


0.01 is completed


/home/mahdi/.local/share/virtualenvs/machine-learning-final-project-uk2p9d2v/lib/python3.6/site-
    "the number of iterations.", ConvergenceWarning)


0.1 is completed


/home/mahdi/.local/share/virtualenvs/machine-learning-final-project-uk2p9d2v/lib/python3.6/site-
    "the number of iterations.", ConvergenceWarning)


1 is completed


/home/mahdi/.local/share/virtualenvs/machine-learning-final-project-uk2p9d2v/lib/python3.6/site-
    "the number of iterations.", ConvergenceWarning)


10.0 is completed
100.0 is completed
```

```
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  "the number of iterations.", ConvergenceWarning)


In [6]: report

Out[6]: [{'C': 0.0001, 'non-zeros': 3540},
         {'C': 0.0002, 'non-zeros': 3463},
         {'C': 0.0005, 'non-zeros': 3301},
         {'C': 0.001, 'non-zeros': 3178},
         {'C': 0.002, 'non-zeros': 2799},
         {'C': 0.005, 'non-zeros': 2299},
         {'C': 0.01, 'non-zeros': 1940},
         {'C': 0.1, 'non-zeros': 1148},
         {'C': 1, 'non-zeros': 718},
         {'C': 10.0, 'non-zeros': 410},
         {'C': 100.0, 'non-zeros': 138}]
```