logistic_regression_l1_number_of_unzero_coef

January 30, 2019

```
In [1]: import numpy
        from sklearn.model_selection import cross_val_score
        from sklearn.linear_model import LogisticRegression
        from models import logistic_regression
```

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In [2]: X = numpy.loadtxt("./data/Train/X_train.txt")
        y = numpy.loadtxt("./data/Train/y_train.txt")
```

```
In [3]: 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 = logistic_regression.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)
```

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  "the coef_ did not converge", ConvergenceWarning)
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```
In [5]: report
```

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Out[5]: [{'C': 0.0001, 'non-zeros': 3247},
         {'C': 0.0002, 'non-zeros': 3256},
         {'C': 0.0005, 'non-zeros': 3259},
         {'C': 0.001, 'non-zeros': 3247},
         {'C': 0.002, 'non-zeros': 3237},
         {'C': 0.005, 'non-zeros': 3204},
         {'C': 0.01, 'non-zeros': 3142},
         {'C': 0.1, 'non-zeros': 2110},
         {'C': 1, 'non-zeros': 479},
         {'C': 10.0, 'non-zeros': 93},
         {'C': 100.0, 'non-zeros': 23}]
```