

CS 240 : Lab 4

Logistic Regression and Naïve Bayes Classifiers

TAs: Onkar Borade, Ramsundar

To view marks and test case outputs/errors see gradescope.

1 Logistic Regression [55 marks]

Marks distribution as provided in the question.

- `logistic` 5 marks
- `log_loss` 10 marks
- `costs` 15 marks
- The `grad_desc: weights` 25 marks

Private test case file - "*test.csv*". Use the test split instead of training split part of the data when using gradient descent. Note, for your verification purpose, expected values of (history of weights and history of costs) is given in `private_expected_output_q1_cost.txt` and `private_expected_output_q1_params.txt`.

2 Implementation of the Softmax [25 marks]

Marks distribution as provided in the question.

- `predict` 5 marks
- `softmax` 10 marks
- `cross_entropy` 10 marks

Private tests - use `digits dataset` i.e.,

```
X,y = datasets.load_digits(return_X_y=True, n_class=3)
```

instead of

```
X,y = datasets.load_iris(return_X_y=True)
```

in your code. For your verification purpose, expected values of final weights is given in `private_expected_output_q2.txt`.

3 Naïve Bayes Implementation [20 marks]

Marks distribution as provided in the question.

- `def _calc_class_prior(self)` to calculate the prior: 5 marks
- `def predict(self, X):` 15 marks

Private test case file - "*weather2.txt*". Expected final output can be found in `private_expected_output_q3(on STDOUT).txt`. Note all need to be correct.