Unsupervised Logistic Regression

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**1 INTRODUCTION AND MAIN CONCEPTS**

Once you complete the exercise successfully, the results should match the expected results from the manual

**2 METHODOLOGY**

**2.1 Implementation**

Once you complete the exercise successfully, the results should match the expected results from the manual

**2.2 Evaluation**

Once you complete the exercise successfully, the results should match the expected results from the manual

**3 RESULTS AND DISCUSSION**

**3.1 OUTPUT**

Iteration 1:

Step Length: 1.20841e-006

Function Val: 6.56813e+003

Opt Cond: 4.08993e+003

Iteration 32:

Step Length: 0.00000e+000

Function Val: 4.84302e-001

Opt Cond: 1.36673e-001

Optimization took 9.185740 seconds.

Training accuracy: 100.0%

Test accuracy: 100.0%

**3.2 MATLAB CODE**

logistic\_regression.m

**function** **[**f**,**g**]** **=** logistic\_regression**(**theta**,** X**,**y**)**

%

% Arguments:

% theta - A column vector containing the parameter values to optimize.

% X - The examples stored in a matrix.

% X(i,j) is the i'th coordinate of the j'th example.

% y - The label for each example. y(j) is the j'th example's label.

%

m**=**size**(**X**,**2**);**

% initialize objective value and gradient.

f **=** 0**;**

g **=** zeros**(**size**(**theta**));**

%

% TODO: Compute the objective function by looping over the dataset and summing

% up the objective values for each example. Store the result in 'f'.

%

% TODO: Compute the gradient of the objective by looping over the dataset and summing

% up the gradients (df/dtheta) for each example. Store the result in 'g'.

%

%%% YOUR CODE HERE %%%

%for i = 1:m

%h=1/(1+2.718^(-theta' \* X(:,i)));

%f = f + sum(-y.\*log(h) - (1-y).\*log(1-h));

%end

%f = (1/m)\*f;

%for i = 1:m

% h=1/(1+2.718^(-theta' \* X(:,i)));

% g = g + X(:,i)\*(h - y(i));

%end

%g = 1/m\*g;

f **=** **-**sum**(**y**.\***log**(**sigmoid**(**theta**'\***X**))** **+** **(**1**-**y**).\***log**(**1 **-** sigmoid**(**theta**'\***X**)));**

g **=** X**\*(**sigmoid**(**theta**'\***X**)** **-** y**)';**

**4 CONCLUSION**

**REFERENCES**