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CU_M Ex6 Tutorials



Chirag Uttamsingh · Mentor · General Discussion · 3 years ago · Edited by moderator

Here are the ex6 tutorials by Tom Mosher:

gaussianKernel():

The method is similar to that used for sigmoid.m in ex2. The numerator is the sum of the squares of the difference of two vectors. That's just like computing the linear regression cost function. Use `exp()` and scale by the value given in the formula (top of page 6 of ex6.pdf)

dataset3Params():

Inside the inner loop:

- Train the model using `svmTrain` with `X`, `y`, a value for `C`, and the gaussian kernel using a value for `sigma`. See `ex6.m` at line 108 for an example of the correct syntax to use in calling `svmTrain()` and the gaussian kernel. Note: Use temporary variables for `C` and `sigma` when you call `svmTrain()`. Only use 'C' and 'sigma' for the final values you are going to return from the function.
- Compute the predictions for the validation set using `svmPredict()` with model and `Xval`.
- Compute the error between your predictions and `yval`.
- When you find a new minimum error, save the `C` and `sigma` values that were used. Or, for each error computation, you can save the `C`, `sigma`, and error values as rows of a matrix. When all 64 computations are completed, use `min()` to find the row with the minimum error, then use that row index to retrieve the `C` and `sigma` values that produced the minimum error.

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processEmail():

Start by setting a breakpoint in the `processEmail.m` script template (use the code editor in the GUI), in the blank area below the "YOUR CODE HERE" comment block. Then run the `ex6_spam` script.

When program execution hits the breakpoint, it will activate the console in debug mode. There you can inspect the variables "str" and "vocabList" (type the variable name into the console and press <Enter>).

Observe that `str` holds a single word, and that `vocabList` is a cell array of all known words. Resume execution with the 'return' command in the debugger.

For the code you need to add:

Here is an example using the `strcmp()` function showing how to find the index of a word in a cell array of words:

```
1  small_list = {'alpha', 'bravo', 'charlie', 'delta',  
               'echo'}  
2  match = strcmp('bravo', small_list)  
3  find(match)
```

`strcmp()` returns a logical vector, with a 1 marking each location where a word occurs in the list. If there is no match, all of the logical values are 0's.



The find() function returns a list of the non-zero elements in "match". You can add these index values to the word_indices list via concatenation.

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Note that if there is no match, find() returns a null vector, and this can be concatenated to the word list without any problems.

Note that your word index list must be returned as a column vector. If you make it a row vector, the submit grader will still give you credit, but your emailFeatures() function will not work correctly.

=====

emailFeatures:

The emailFeatures() function is one of the simplest in the entire course:

- You're given a list of word indexes.
- For each index in that list, you're asked to set the corresponding entries in an 'x' array to the value '1'.

A couple of different methods could be used:

- Loop through the list of word indexes, and use each index to set the corresponding value in the 'x' array to 1.
- Take advantage of vectorized indexing, and do the same operation in one line of code without the loop.

Note that the 'x' feature list must be a column vector, and the word_indices list (which is provided by your processEmail() function) must be a column vector.

You can complete this function by adding only one line of code. Try this example in your console:

```
1  vec = zeros(10,1)    % included in the function template
2  indexes = [1 3 5]    % you're provided with a list of
    indexes
3  vec(indexes) = 1     % set the values to 1
```

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