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Test Case for polyFeatures()

Tom Mosher · Mentor · Week 6 · 3 years ago

Here is a test case for the polyFeatures() function

```
1 >> polyFeatures([1:3]',4)
2 ans =
3      1      1      1      1
4      2      4      8     16
5      3      9     27     81
```

=====

keywords: test case polyFeatures

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David Gill · 2 years ago



This may be helpful to others as it's a convenient way to to test via octave unit test. Here's the unit test version of the test case (just run with "test polyFeatures"). Add to very bottom of code after end in file:

```
1 %!test
2 %! p = polyFeatures([1:3]',4)
3 %! p_expected = [1    1    1    1; 2    4    8    16; 3    9
                  27   81];
4 %! assert(p, p_expected, 1);
```

↑ 9 Upvotes

💬 Reply

IP

levgen Potapenko · 2 years ago · Edited



Hi,Tom. I've made a code for **polyFeatures.m** and received 10 points for it. But eventually it became clear that my code has an error. Proposed test case also works fine. But my code fails this test **polyFeatures([1:7]',4)**.

Should I send it to you or anybody else? May it can be used to amend scoring check algorithm? Thank you.

↑ 0 Upvotes

💬 Hide 3 Replies



Tom Mosher · Mentor · 2 years ago



Here's my result for that test case:

```
1 polyFeatures([1:7]',4)
2 ans =
3
4      1      1      1      1
5      2      4      8     16
6      3      9     27     81
7      4     16     64    256
8      5     25    125    625
9      6     36    216   1296
10     7     49    343   2401
11
12
```

Please post your result.

↑ 0 Upvotes



My result is following:

```
1 >> polyFeatures([1:7]',4)
2 ans =
3
4      1      1      1      1      1      1      1
5      2      4      8     16      2      2      2
6      3      9     27     81      3      3      3
7      4     16     64    256      4      4      4
8      5     25    125    625      5      5      5
9      6     36    216   1296      6      6      6
10     7     49    343   2401      7      7      7
```

The issue had place because to establish number of columns I applied **size(X)** instead of **size(p)** when I transformed vector **X** into matrix [**X** rows x p columns].

But once again - the code with mistake was submitted and received 10 scores.

↑ 0 Upvotes



Tom Mosher · Mentor · 2 years ago



The submit grader checks only one specific test case. It is not proof that your function is perfect.

↑ 0 Upvotes



Tom Mosher · Mentor · 2 years ago · Edited



How about:

```
1 exp_matrix = ones(m, 1) * [(1:p)]
```

Then you can use this for element-wise exponentiation of X.

↑ 1 Upvote

Hide 4 Replies



Pankaj Sharma · 2 years ago



do you mean to say like this;

X_poly=x'.^exp_matrix,



I think we will have to then use `exp_matrix.^x` but that does not give the right answer. The thing is even if the wrong answer atleast the operation is possible. In my case its showing matrix dimension dont agree, I don't understand why?

```
x=[1:3]';
```

```
m=size(x,1);
```

```
p=4;
```

```
x=ones(p,1)*x'
```

```
x_poly=x'.^(1:p)
```

This gives correct answer for the test case, at the least matrix dimensions agree why is it showing not agreeing in example, I don't understand?

↑ 0 Upvotes



Tom Mosher · Mentor · 2 years ago



Both methods work, at least in Octave. If you're using MATLAB, only one of them may work - it is a little more picky with regards to compound statements.

↑ 0 Upvotes



Tom Mosher · Mentor · 2 years ago



Of course, this is pretty simple as well:

```
1 X_poly = bsxfun(@(a,b) a.^b, X, 1:p);
```

↑ 5 Upvotes



Tom Mosher · Mentor · 2 years ago



After you have a chance to study the issue, I'm going to edit these posts, as they give too much away with regard to the Honor Code.

↑ 1 Upvote



Pankaj Sharma · 2 years ago





Hii, I am using multiplication by a column vector of ones and I get perfect answer for test case when I try it in a separate window but still in the original code its showing matrix dimension don't agree. X is 12×1 and multiplying ones column vector of $p \times 1$ (with X transpose) gives a vector $p \times 12$ matrix whose transpose I am using to element wise power with $1:p$ matrix.

I am unable to figure out whats wrong. Please have a look. hopefully i am not breaking any rules here, if I am please notify me of that and remove my comment

↑ 0 Upvotes Reply

BL Bhaskaramurthi Lakshmanamurthi · 3 years ago



Hi Tom,

I get this answer when I test this example?ans =

6 36 216 1296

what could be the mistake?

Thanks,

bhaskar

↑ 0 Upvotes Reply

RV Rao Venu · 3 years ago



Hello Tom

Is it possible to achieve this without a for loop? Wondering if I have to replace my solution with a vector based solution.

Thanks

-Venu Rao

↑ 1 Upvote Hide 4 Replies



Tom Mosher Mentor · 3 years ago



Yes, there are a couple of methods. Using the element-wise exponentiation operator `.^` is the key.



↑ 1 Upvote



Tom Mosher · Mentor · 3 years ago



Note that the submit grader doesn't care how you implement the function - it doesn't inspect your code, just the values it returns.

↑ 0 Upvotes

GS

Geoffroy Seive · 3 years ago



Vector and matrix calculation is really cool! I'm sold on it! So I used the `.^` operator which makes the code really compact but there is still a loop for `p`; but then I thought if octave supports recursion that should allow getting rid of the loop. And sure enough it does. `polyFeatures` becomes one line with just an if statement. It's compact but still readable. Can't imagine writing that in C#!

↑ 4 Upvotes



Sindri · 2 years ago



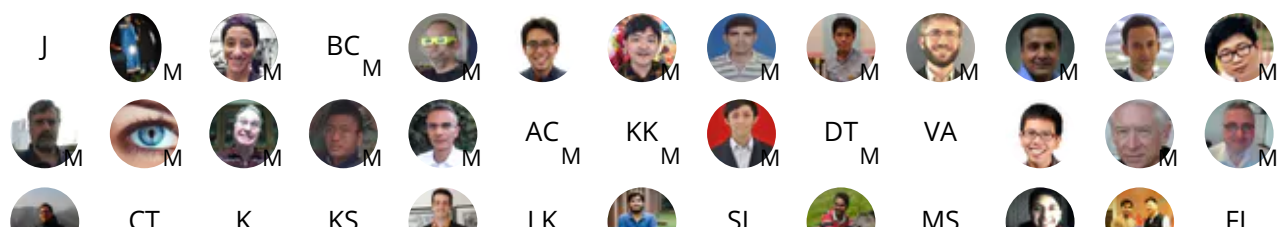
I am curious.


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DESCRIPTION














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






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