



HKUSTx: ELEC1200.3x A System View of Communications: From Signals to Packets (Part 3)

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Lab 1 Task 4 theoretical efficiency from lecture equation

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discussion posted about 18 hours ago by [KarenWest](#)

I have everything calculated correctly in Lab 1 Task 4 except for the theoretical efficiency from the lecture equation. Here is a code snip of only that section. Does anyone know what's wrong with my equation? Thanks.













```
p = p_list(pc);
if (p ~= 0) && (p~= 1) && (n_coll(pc) >= 1)
    exponentValue = n_coll(pc) - 1;
    exponentPart = (1 - p)^exponentValue;
    expeff_v(pc) = n_coll(pc) * p * exponentPart;
elseif (p == 0)
    expeff_v(pc) = 1;
elseif (p == 1)
    expeff_v(pc) = 0;
end
```

Related to: [Topic 2: The Link Layer / 2.4 Efficiency of Slotted Aloha](#)

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3 responses

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-  [STAFF] Please clarify due dates--23:30 or 15:30? 1
-  payment 1
-  Quiz 1.3 1
-  the new Matlab interface is much more user friendly 1
-  Lab 1 Task 1 and Lab 1 Task 4 Efficiency 3
-  lab 1
- [STAFF]:PLEASE PROVIDE PPT'S INSTEAD OF PDF HANDOUT'S 1
- Lab 1 Task 4 theoretical efficiency from lecture equation 6
★ FOLLOWING
-  [STAFF] lab 1.4 typos 2
-  [STAFF] Matlab Sandbox 2
-  Opinions on the new interface 4
-  i dont anderstand 3
-  ERROR loading functions from 3x_library1 4
-  Part 1 and Part 2 of this course 2

Elaktrona

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about 14 hours ago



N in the above expressions for computing `expeff_v` should be **n_users**, not `n_coll(pc)`

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PeterB001

1 Vote



about 14 hours ago



Hi Karen,

Have a look at slide #5 of "ELEC1200_3x_Wk1_T2_L4_Efficiency_of_Slotted_Aloha.pdf". You can implement this in one line of code if you use the [Element-wise](#) operator (".").

In that formula what is "N"? - "N" is a constant.

Good luck

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[STAFF] lab 1.3 results label wrong

4

? Lab1 Task 4 cannot done offline

5

? postponing the course

2

[STAFF] Lab 1 Task 3 cannot be done offline

8

KarenWest

0 Votes



about 8 hours ago

Thank you both for your responses and I will investigate my mistakes and your comments later today and post back here. I'm on snow clean up duty this morning! Easton (south of Boston,MA) only got about 8 inches, so nothing to clean up compared to NY City, Philadelphia and the Washington DC area. So I'll be back later! Thanks for your help.

I appreciate your comments that N is a constant, but I find I'm still confused with the formula, since I thought that N was the number of collisions for a given probability of successful transmission on slotted Aloha, not the total n_users number. PC is the index within the p_list of probabilities spaced apart in the list by 0.05 going from 0 to 1, so if n_coll(pc) is used, it's the number of collisions at that index during the transmission successes, failures, and empties that are counted for that probability iteration. Also, with the comment about using the "." to iterate over an array for an operator such as multiplication, I was not clear on how to use that here.



```
exponentValue = n_coll(pc) - 1;
exponentPart = (1 - p)^exponentValue;
expeff_v(pc) = n_coll(pc) * p * exponentPart;
```

could be written instead in one line as (??)-- sorry --not that experienced with MATLAB, although I have used the element-wise operator in past versions of this class (parts 1 and 2) occasionally:

```
expeff_v = n_coll .* p_list .* (1 - p_list).^(n_coll-1)
```

Any more help is appreciated! ;-) Thanks.

posted about 8 hours ago by **KarenWest**

Now apply Elaktrona's advice. The resulting (dashed) plot should track a previous curve calculated.



posted about 5 hours ago by [_derrickb](#)

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PREVIEW

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