Gmail **Goutham R <goutham7r@gmail.com>**

hey

1 message

Subramoney, Sreenivas <sreenivas.subramoney@intel.com> Mon, May 16, 2016 at 4:22 PM
To: Goutham R <goutham7r@gmail.com>

Hi,

I spent a little this morning thinking about your internship problem (I should not have, given its your problem!) … but sort of was drawn to it!

I am not sure if I understood the problem fully correctly, but if I have - here is an algorithm that will probably do better than the basic greedy algorithm...

t/function	$f_1(t)$	$f_2(t)$	….	$f_B(t)$	….	$f_{k-1}(t)$	$f_k(t)$
0 (current time)				Value(B, 0)			
1							
2							
3							
… ….							
M-1							
M							
…..							
…..							
…..							
…..							
N-1							

N							

-

-

Calling it the “Forward-M-Greedy Algorithm”

Above, k is number of buttons. M is wavefront on which the algorithm operates forward looking from current time…

At t=0, do the following

{

for every Button B = 0 through k {

Create copy of main matrix for this iteration called TEMP

Assume Button B was pressed.

Replace Column B in TEMP, with values as: $f_B(0)$, $f_B(1)$, $f_B(2)$….. $f_B(M)$…..

Initialize CUMULATIVE_FUTURE_VALUE (B) ß $f_B(0)$;

For every future time j = 1 to M {

Find the Button Y at which the maximum Value for row j occurs.

Call that value Value as FUTURE_VALUE_MAX(B, j, Y)

CUMULATIVE_FUTURE_VALUE (B) += FUTURE_VALUE_MAX(B, j, Y);

} //for

} //for

Find the Button b for which maximum of MAX_CUMULATIVE_FUTURE_VALUE(B) occurs

Find the MAX_CUMULATIVE_FUTURE_VALUE_WHEN_NO_BUTTON_IS_PRESSED

This is easily calculated without replacing any column and doing max value per row accumulated across j=1 to M

Actually press button b or press nothing in the real system depending on whichever is higher between MAX_CUMULATIVE_FUTURE_VALUE_WHEN_NO_BUTTON_IS_PRESSED and MAX_CUMULATIVE_FUTURE_VALUE(B)

}

Do the same as time moves forward to t=1, 2, 3…. (the matrix now shifts down & and old t=0 row is removed and a new row (for M+1) is exposed now…

Above algorithm can be done for the value of M high enough till computational budget is reached

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Ignore if I got the problem completely wrong or my solution is obviously faulty J

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More improvements.

Scale button press frequency depending on whether bitonic upswing or bitonic downswing…

Cheers,

Mama