Rule KA2 - grid creation no matter the desired image's size

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I. The need for a different sampling grid

As mentioned in nearest-Rule-KA1.pdf , ruleKA1 will create correct results only if the desired size(both rows and columns size) of the output image is lower or equal to the bayer layer's size. But what happens if we want to get as output an rgb image with larger size ? In order to overcome this problem we must implement a new rule .

II. Sampling Rule-KA2

This rule is pretty much simple, lets supose that our input xb (bayer layer) is a $M_o x N_o$ matrix and we want to create a grid matrix, which size will be MxN , $M > M_o$ and/or $N > N_o$. We place the first point of our sampling grid to the first cell of xb layer (cell (0,0) if coding in most language, cell (1,1) if coding in matlab) and we point the last point of our sampling grid at the last cell of xb . We start counting from the first cell , procceding with step $\frac{M_o}{M}$ through rows and with step $\frac{N_o}{N}$ through columns , until we reach the last cell of xb.**[KA2]** It should also be mentioned that applying KA2 rule the result is a sampling grid , whose most coordinates are float numbers , so we cant use them directly in order to get a cell from xb . A lot of different aproaches can be used here, we will use the most simple of them, we will just round/floor the coordinates.

III. The function nearest-Rule-KA2

It is the function that applies KA2 rule and nearest method in order to create a $MxNx3$ rgb image as result . The function works properly for every input and retreives an rgb image according to grbg bayer pattern . If another pattern is used then you must manually change the values of w array (check the script) and the function will be able to produce correct results .

Just to mention(again) that this is func is for demonstration purposes only , if you are using matlab check out how the **demosaic** works .