

Some hints about lab 2:

- First of all, you can realize that the dimensions of the final image we want to generate are defined in picture height(**ph**). The height is **768 pixels** which is **1ph** and the width is **1024 pixels** which is **4/3 ph**.
- Taking the zone-plate(**f1**) as an example, it is evaluated over the domain of **0:0.5 ph** in the x-direction and **0:1 ph** in the y-direction. This means that **f1** will occupy **384 pixels** in the x-direction and **768 pixels** in the y-direction.
- To generate **f1**, we need to generate the points over which we will evaluate the function (the domain of the function), so we need to use the “**meshgrid**” function (review lab 1).
- The “**meshgrid**” function takes two arguments, let us talk about its 1st argument and call it “**x**” (same reasoning applies to the second argument):
- We know that “**x**” is a vector, with values in the range from 0:0.5, AND DON'T FORGET, its length should be 384 elements, since the width of **f1** in the final image is 384 pixels. Now, you have all the information you need to define “**x**”. Afterwards, define the second argument of the “**meshgrid**” function using a similar reasoning, evaluate the zone-plate over the matrices you get from the “**meshgrid**” and plot **f1**.
- We need to use the “**meshgrid**” function to generate the points over which we will evaluate the zone-plate(**f1**) and the sinusoids(**f2**). However, we don't need the plotting function “**mesh**” since we will plot all the functions as images using the function “**imshow**”. You can try it anyways, Matlab will not complain but the result will not be visually plausible.
- I recommend the generation of every function individually, check everything is working and then mosaic (concatenate) them.
- For concatenating two matrices “**A**” and “**B**” horizontally and putting them in a third variable “**M**”, we simply write **M = [A,B]** or **[A “space” B]**. For vertical concatenation, it will be **M = [A;B]** with a semicolon instead of the comma/space. TAKE CARE, concatenation requires matrices of compatible sizes, Matlab will NOT pad zeros automatically.
- Don't forget to download the photo (f2) from the web link of lab session 2 accessible through the course webpage.
- My email is available 24/7 (**aalka046@uottawa.ca**).