

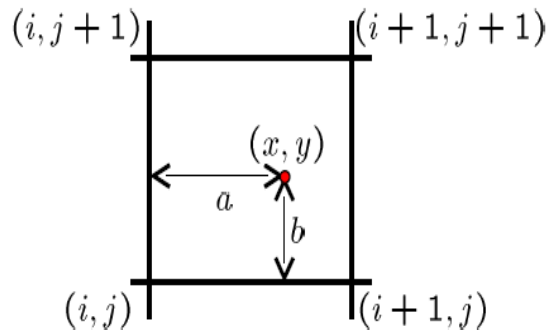
**Computer Vision**  
EMARO- *European Master on Advanced Robotics*  
*Robotics Engineering Master Degree*

**Lab Session n. 1**

Image warping and bilinear interpolation

Given a coordinate transform  $(x,y)=h(x',y')$  and a source image  $f(x',y')$ , compute a transformed image  $g(x,y) = f(h(x',y'))$ .

- Perform backward warping (from the output image to the input image) with a bilinear interpolation, see figure (it is possible to use the function `griddata`).
- Example of transformations: translation and rotation (try different angles).



$$\begin{aligned} f(x, y) = & (1-a)(1-b) f[i, j] \\ & + a(1-b) f[i+1, j] \\ & + ab f[i+1, j+1] \\ & + (1-a)b f[i, j+1] \end{aligned}$$

**Notes:**

- You have to write a report that describes your work and the obtained results (please include the figures). In the report you must indicate all the surnames of the participants (not other names, e.g. the teachers).
- About the code:
  - You have to use relative paths.
  - You have to write and use functions
  - You have to provide us a script to test your code.
- The code must be uploaded as M-files. All the files (M-files, images, and report) have to be compressed in a single file named “surname\_labxx.zip/tgz/rar” (all the surnames of the participants have to be indicated), and then the compressed file has to be uploaded.