ADIP-2020
ASSIGNMENT-2

Consider the image 'Garden.JPG' as input to your computation. Compute the following with respect to the ground plane.

(i) Develop an interactive GUI capable of drawing line segments and obtaining their equations or representation as elements of a 2-D projective space P^2. (20 marks)

(ii) Vanishing line **V**. (10 marks)

(iii) Draw a **line L** parallel to the vanishing line **V** passing through the center of the image. (10 marks)

(iv) Develop an interactive GUI, so that highlighting a point **p** on the line **L** by a vertical bar intersecting at that point **p**, it would show three sets of transformed parallel lines meeting to the respective vanishing point (the intersecting point with the same vertical line or bar) in **V**. (30 marks)
Hints: Any plausible homography providing the same vanishing line may be obtained.

(v) Obtain a transformation for affine rectification and produce the output image after such rectification. You may mask all other regions except the ground of the garden in the output image. (30 marks)

Bonus marks, if all the modules implemented properly. (10)

You may implement your programs in C++-OpenCV/MATLAB/ Python with necessary user's interfaces and visualization of your results and input.
Please provide a documentation for compiling and running the programs in a README file.
The whole project should be submitted in a single tar or zip file.