

1. Consider the photograph of Soongsil University, Seoul, Korea in Figure 1.



Figure 1: Click on the image to obtain the jpeg.

Indicate how it may be possible to find the following information from the image. State if any additional information are required (like a measurement in the world, or the camera *EXIF* information), or if the task is impossible.

- (a) Affine measurements on any one of the faces of the two buildings and the pyramid.
- (b) Euclidean measurements on any one of the faces of the buildings and the pyramid.
- (c) Ratio of the heights of the i) building in front (behind the pyramid), ii) the building in which we had our classes and iii) the pyramid.
- (d) The absolute distance of the camera from the top-right-front corner of the building behind the pyramid.
- (e) The orientation of the camera with respect to a coordinate axes placed on the three edges of the top-right-front corner of the building behind the pyramid.
- (f) The camera internal calibration matrix \mathbf{C} .