

Project 5 Questões

Questions

Q1: Suppose you have a sequence of N images, and you have computed the $N - 1$ homographies between each image pair. Let $I_p \neq I_r$ be two images in the set. Thus, homography H_{rp} transforms image I_p to $I_r = H_{rp}I_p$. How can we relate the transformation from image I_p to image I_r , assuming we have image I_q between them. What should we do if we need to transform image I_r to I_p using only the $N - 1$ homographies computed?

A1: Usando a seguinte fórmula.

$$\begin{bmatrix} Vx \\ Vy \\ 1 \end{bmatrix} = \begin{bmatrix} h11 & h12 & h13 \\ h21 & h22 & h23 \\ h31 & h32 & h33 \end{bmatrix} * \begin{bmatrix} Ux \\ Uy \\ 1 \end{bmatrix}$$

Q2: Using the RANSAC method to fit data to a model is particularly interesting when the data is considerably noisy. Why using RANSAC in project 5 is interesting? Why the number of outliers tend to grow as you add new images to the mosaic?

A2: A utilização do RANSAC é empregada para o reconhecimento de objetos, possibilitando assim o algoritmo encontrar, correspondências geométricas por meio da homografia entre as imagens. O RANSAC funciona em conjunto com o SIFT, na qual ele detecta os principais pontos de uma imagem. O número dos pontos Outliers tendem a aumentar pois as comparações ocorrem com os resultados das homografias nas execuções anteriores.

Q3: Suppose you are implementing a mosaicing application. Once defined the image that will be the mosaic plane, at the mosaic center, how can we transform the remaining images in only one step, i.e, what we must change in each homography matrix to account for the relative translation?

A3: É necessário tomar como base o centro da imagem do conjunto. E a partir dela, calcular a rotação das outras imagens, deixando todas no mesmo plano.

Q4: If we know the homography matrix H_{rp} that transforms image I_p to I_r , how can we obtain homography H_{pr} ?

A4: Your answer here.