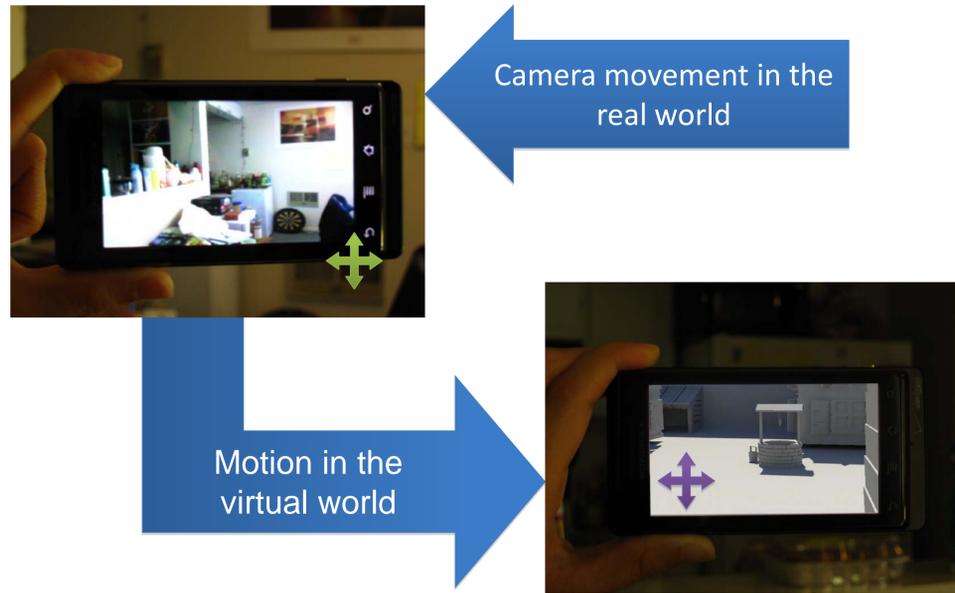


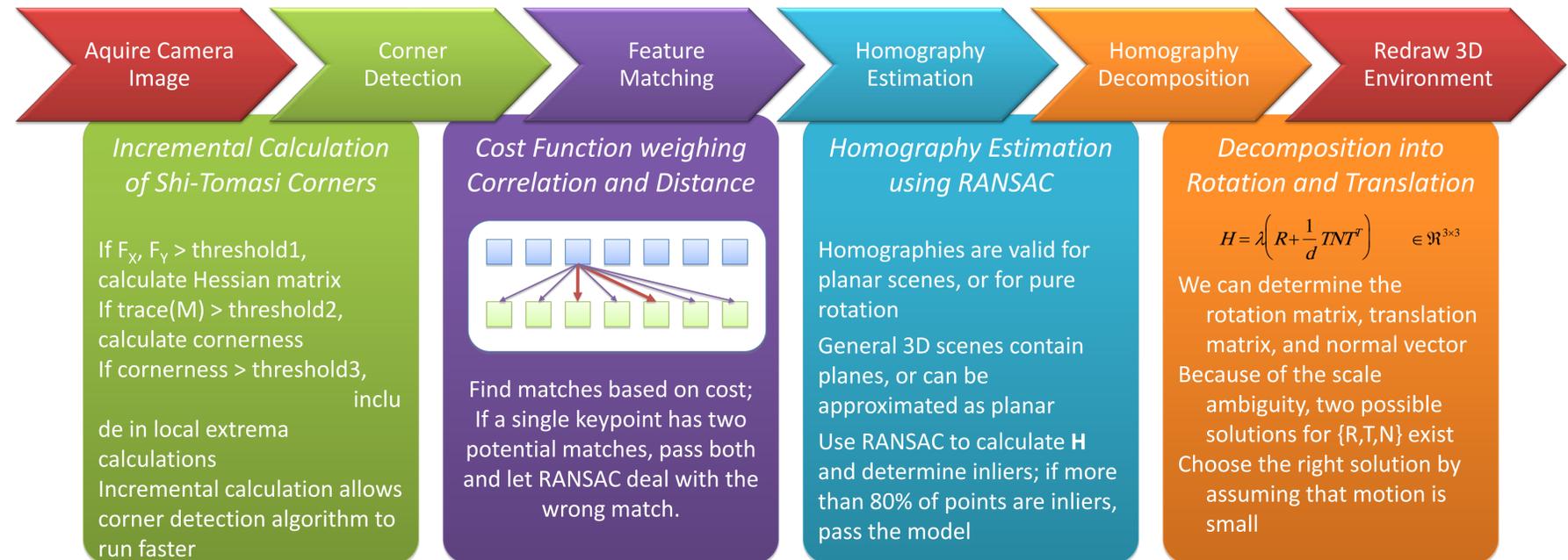
Real-Time Camera Pose Estimation for Virtual Reality Navigation

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Virtual Reality Navigation



Camera Pose Estimation



Feature Detection



Shi-Tomasi Corners

$$M = \begin{bmatrix} \langle F_x^2 \rangle & \langle F_x F_y \rangle \\ \langle F_x F_y \rangle & \langle F_y^2 \rangle \end{bmatrix}$$

$$C = \min(\lambda_1(M), \lambda_2(M))$$

Homography Estimation

Choose 4 pairs and solve for H such that

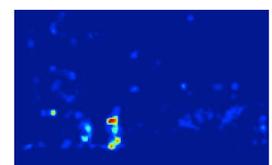
$$\begin{bmatrix} x'_i \\ y'_i \\ 1 \end{bmatrix} = \begin{bmatrix} H_{11} & H_{12} & H_{13} \\ H_{21} & H_{22} & H_{23} \\ H_{31} & H_{32} & H_{33} \end{bmatrix} \begin{bmatrix} x_i \\ y_i \\ 1 \end{bmatrix}$$



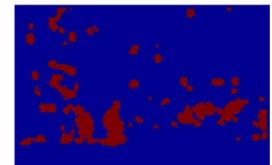
Experimental Results



Cornerness based on original ST

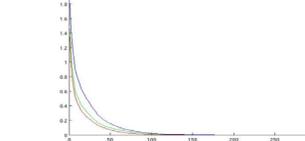


Cornerness based on speeded-up ST

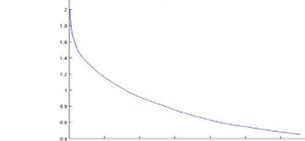


Regions included in local max. calculations

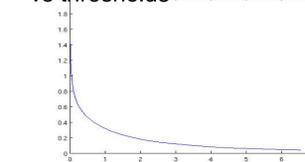
Number of calculations vs threshold1



Number of calculations vs threshold2



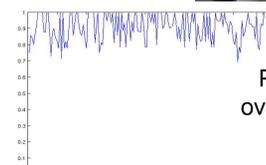
Number of calculations vs threshold3



ST Corners



Matching keypoints



Percentage of Inliers over Successive Frames

Estimated Pose

