RANSAC

- RANdom Sample Consensus *[Fischer, Bolles, 1981]*
- Randomly select subset of k correspondences
- Compute geometric mapping parameters by linear regression
- Apply geometric mapping to all keypoints
- Count no. of inliers (closer than $\sum$ from the corresponding keypoint, typical $\sum = 1 \ldots 3$ pixels)
- Repeat process S times, keep geometric maping with largest no. of inliers
- Required number of trials

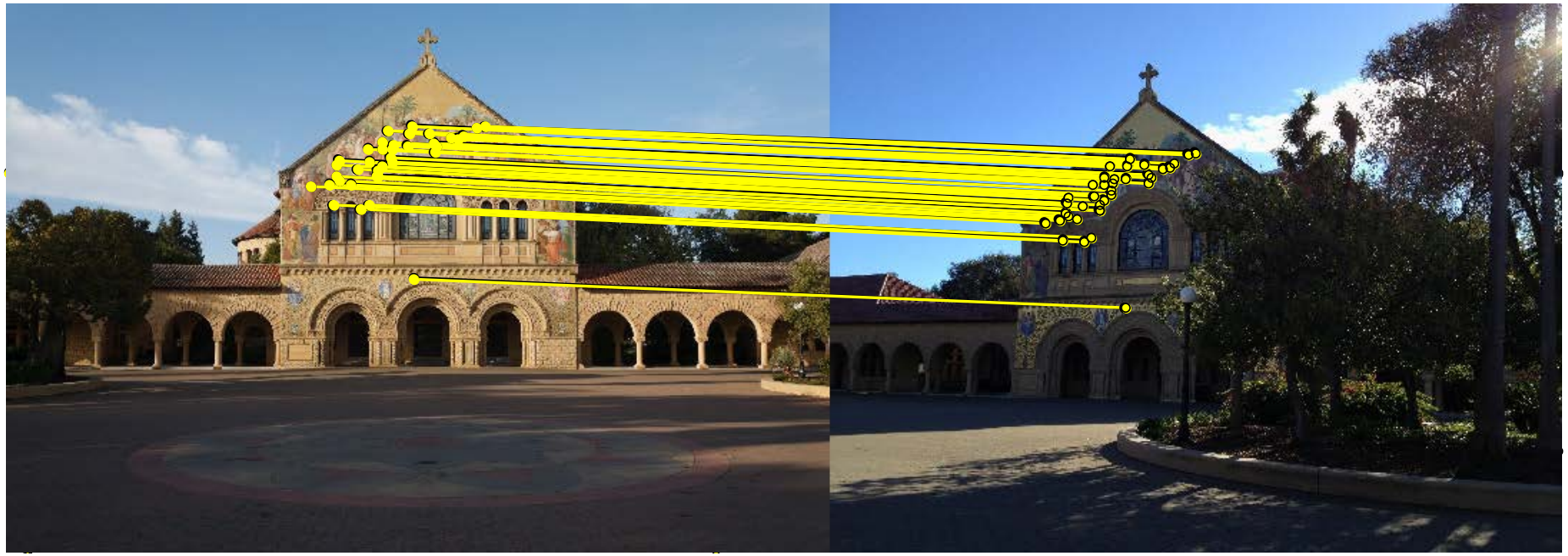
$$S = \frac{\log(1-P)}{\log(1-q^k)}$$

Total probability of success

Probability of valid correspondence

- Use small number of correspondences

RANSAC with Affine Model



RANSAC with Homography

SURF features & affine RANSAC