IMRESTAURANT(): MATLAB FOR FEATURE-BASED RESTAURANT LOGO RECOGNITION

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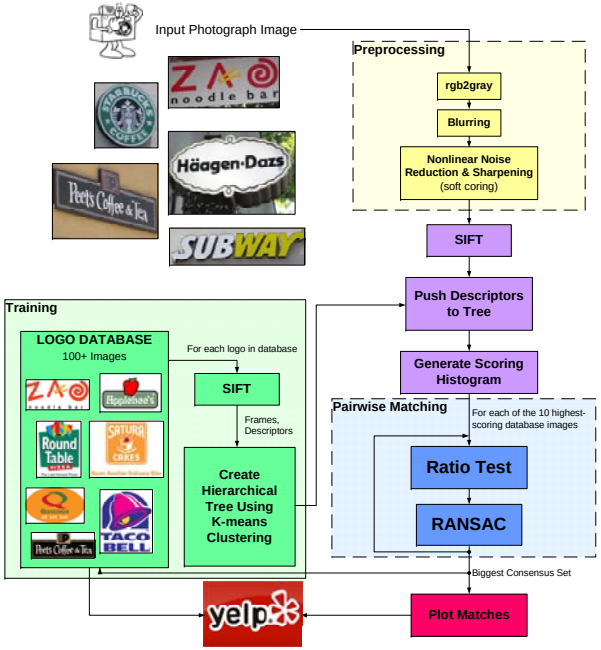
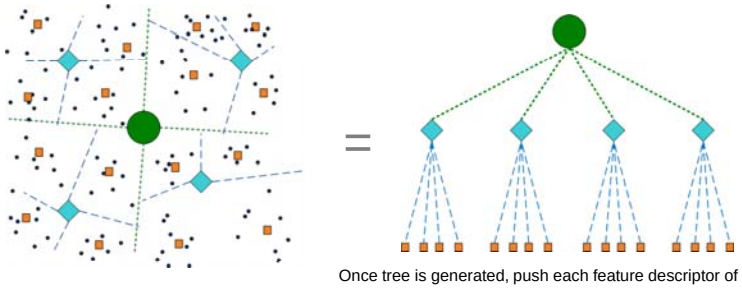
LOGO MATCHING ALGORITHM



HIERARCHICAL K-MEANS



Create hierarchical tree for efficient logo database search

Use K-means clustering on feature descriptors to group keypoints from all database images more generally

Once tree is generated, push each feature descriptor of the camera image through the tree

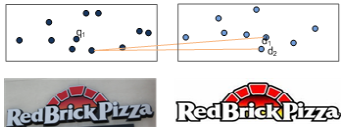
Each leaf corresponds to score weights toward voting for database image matches.

TF-IDF Weight for Scoring: $W_i = \log(\frac{N}{N_i})$

Perform feature-based matching between camera image and top ten images with highest scores.

FEATURE-BASED MATCHING TECHNIQUES

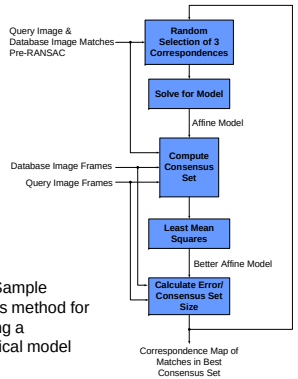
RATIO TEST



For each keypoint in camera image:

- Calculate Euclidean distance to all features in database image
- Calculate ratio of two minimum distances
- If ratio<threshold, store correspondence between features

RANSAC



Random Sample Consensus method for determining a mathematical model

SIFT

Scale -Invariant Feature Transform

Brown, M. and Lowe, D.G. *Invariant Features from Interest Point Groups. 2002*.

RESULTS