Beer Label Classification for Mobile Applications

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Goal of the project

- Create an image processing algorithm for the automated identification of beer types using SIFT-based image matching of bottle labels.

Problem definition

- The main problems associated with this task are challenges that are faced in image search in general i.e., searching images irrespective of angle, disposition in the input image.
- In this project we choose to implement SIFT to address the issues w.r.t image search.

Angular shifts

Task: Searching Images

Issues

SIFT!

How to solve these issues?

Motion Blur

Disposition
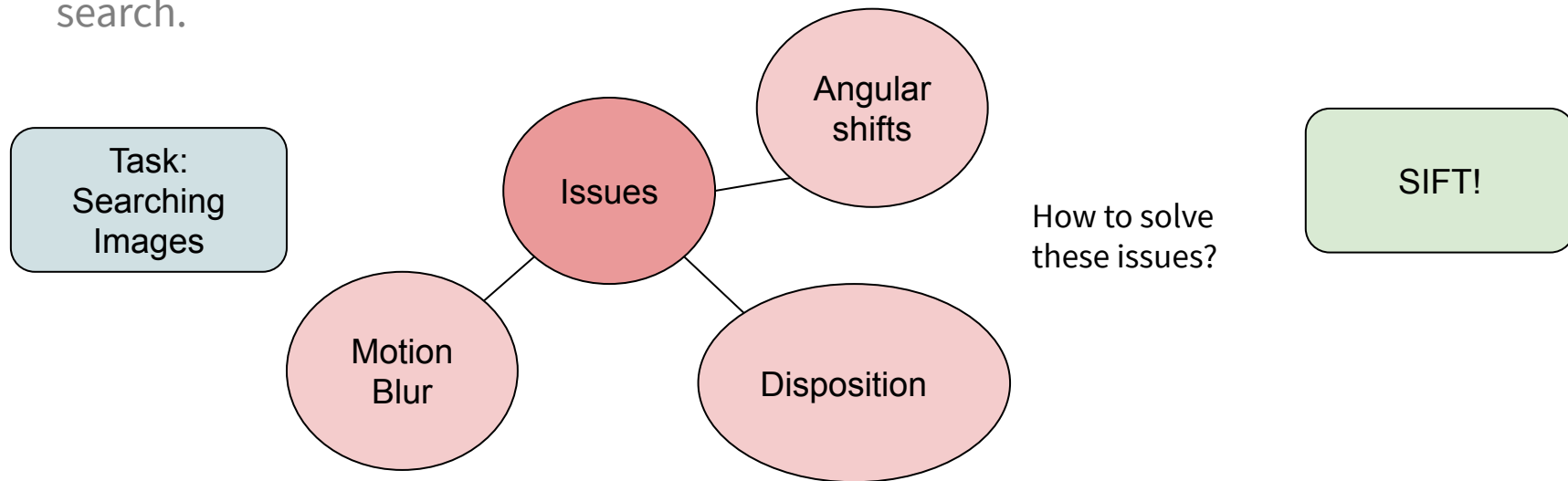
DATABASE CREATION AND PRE-PROCESSING

- We **have generated** the database containing bottle and label images.
- No more than 5 labels are from the same brewery.
- For each database image, a corresponding query (test) image of a beer bottle with that label was found.

Query Images

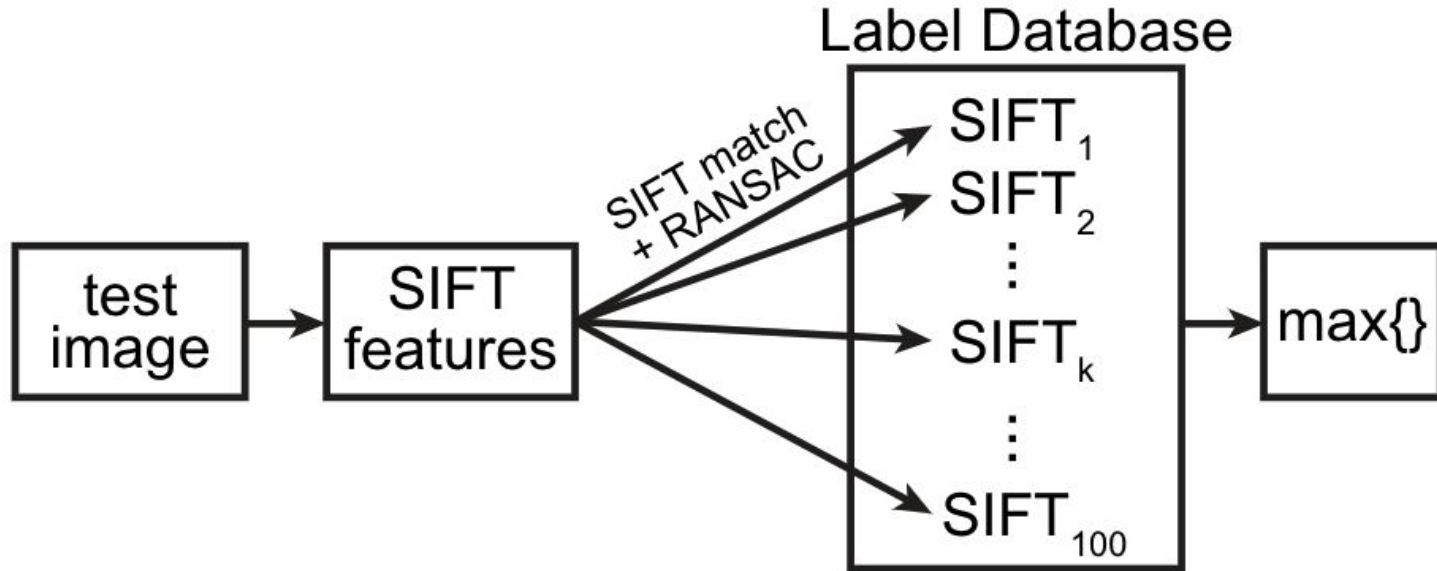Database

Current data collection status

- We have collected **55** images in both database and query. Here are some samples:
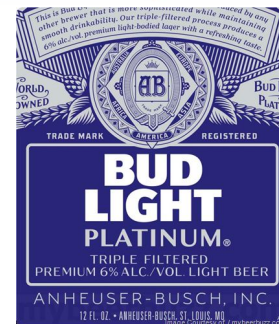

Query images

Database images

Processing strategy

As shown, we'll be extracting SIFT features from the test image. Then, we will match those features with the SIFT features of images from the database. Images having similar features will be queried.

SIFT and Descriptor

- **SIFT keypoints** will be first extracted from all the database images.
- Once SIFT keypoints are identified, a **descriptor** is computed for each of them.
- A descriptor in our case is an **8-bin histogram** will be created for a 4x4 space around the keypoint at its specific scale.
- At a high level, our algorithm will operate by finding the database image that shares the **highest number of SIFT feature** matches with the query image.
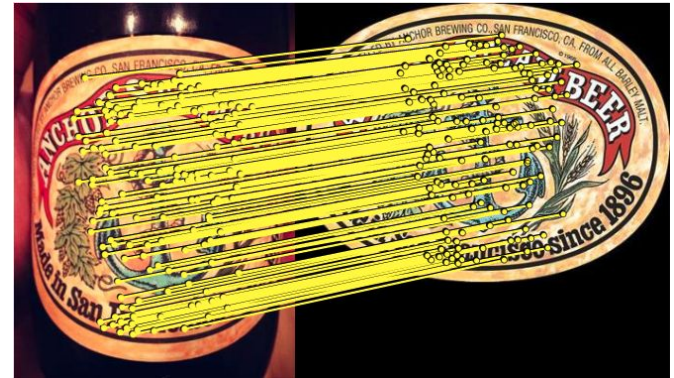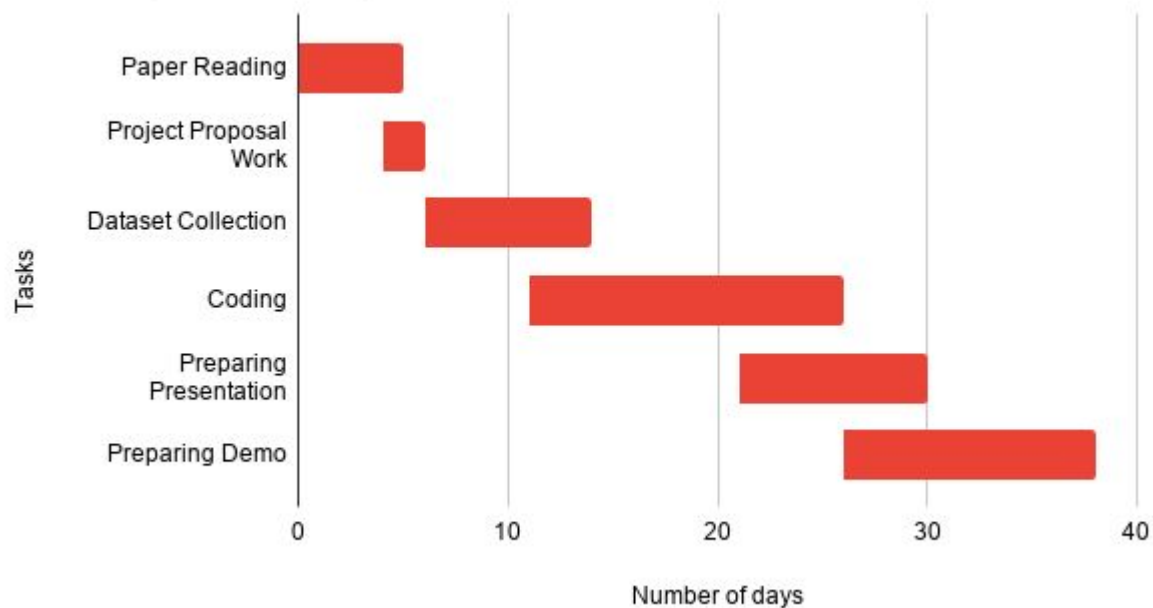
Next Steps

- Finalize the dataset;
- Implement the SIFT algorithm and descriptor;
- Run experiments mentioned in the paper;
- Generate various insights;
- Check other use cases.

Action Plan

- This is how we plan to finish the project.

DIP Project Planning

Cheers!