**Motivation**

Develop image processing algorithm to identify beer labels for mobile applications.
Test robustness of algorithm against common mobile camera issues.

**Dataset**

- 100 clean beer labels and example test photographs collected from Google Images (one test image for each label in database). Separate dataset of 30 Sam Adams labels used to test sensitivity to similar labels.
- Test images taken 6-12 inches from bottle.
- Test images cropped to 4:3 ratio and downsampled to 400 x 300 matrix size for computational efficiency.
- Motion simulated with special motion filter.
- Performance evaluated as a function of distance for 5 labels using raw (non-downsampled) photos taken with iPhone 5 (2448 x 3264 px).

**Classification Results**

- 100% accuracy was achieved for the 100 test image dataset.
- Average query takes ~11 s (grows linearly with database size).
- 29/30 Sam Adams test images correctly labelled, demonstrating high sensitivity.

**Robust against camera distance**

- Graph showing classification success rate vs. distance from bottle.

**Algorithm**

- SIFT features:
  - \( \text{SIFT}_1 \), \( \text{SIFT}_2 \), \( \text{SIFT}_3 \), \( \text{SIFT}_4 \)
- Label Database
- \( \max() \)

The proceedings of the seventh IEEE international conference on, 1999, pp. 1150-1157.

**Future Work**

Perform color histogram matching to increase sensitivity for beers from the same brewery.
Expand label database to ~1000 images and implement vocabulary tree to reduce overhead.
Implement algorithm on a mobile device for real-time processing from a camera input.