

EE368 Final Project: Grocery Checklist Completion and Price Computation  
Aniq Masood  
[amasood@stanford.edu](mailto:amasood@stanford.edu)

The goal of this project is to take an image of items in a shopping cart and check off the items from a pre-defined shopping list. The algorithm would also compute the total cost of the shopping list using prices defined by a database of prices. If an item is captured that is not on the shopping list, it will be added to the list and its price will be added to the total cost.

The algorithm would function by taking an image with multiple objects in it. The image would be segmented based on the objects present, and each segment would be analyzed independently assuming that objects are not overlapping and a picture of the front label of the object is being taken. Each object will be scale and rotationally invariant when compared against a training set of grocery item images. Once the objects are identified, their prices are recorded and added together to get a total price. A final image is returned showing where the objects lie in the image and their individual prices. A grand total is also shown on the image as text.

The algorithm is loosely defined using the following steps:

- (1) Take image of shopping cart. Segment into smaller images to identify individual items.
- (2) Identify SIFT features per segment.
- (3) Apply geometrical mapping to segmented image.
- (4) Compare segmented image to database of images, retrieve prices of identified objects.
- (5) Return original image with overlaid item edges, individual prices, and final price of shopping cart.

I will not be using a DROID camera phone.

**References:**

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- [3] [http://en.wikipedia.org/wiki/Scale-invariant\\_feature\\_transform](http://en.wikipedia.org/wiki/Scale-invariant_feature_transform)
- [4] Gonzalez, Rafael C., and Richard E. Woods. 1992. Digital image processing. Reading, Mass: Addison-Wesley.