1. Motivation

In daily life, people may find some decoration design very attractive when they are reading a home decoration magazine or visiting some well-designed indoor shops like café, shopping mall or restaurants. And later they would like to borrow the idea, to use similar furniture items or theme when they decorate their own home or shop. Often, these individual furniture items are either too expensive or difficult to find in furniture stores. So there exists the need for a tool to get real-time information about the furniture items such as price, more color options, places to buy and similar alternatives. On the other hand, if their home or shop has already been decorated, they would only be interested in knowing whether some specific furniture items would actually fit well in their existing decoration scheme. In order to satisfy the consumers’ needs discussed above, we propose to build a handy android mobile application (if time allowed) which allow users to quickly get information of the furniture items of interest and preview the visual effects in they were to place these items in their home/shop designated location.

2. Usage Scenarios

A typical user would use our app in the following steps:

1) User takes an image from a magazine or in a shop with an Android mobile device. The image will be processed by our background system, which would recognize and label every single furniture item.

2) User selects whether they are interested in applying the whole theme or they are only interested in preview specific items in their own home/ shop.

3) If the user selects to apply the whole theme, a list of all furniture items in the picture would be displayed. For each individual item, we would retrieve similar items in our database with attached information such as price, color options and shopping locations. User can save the information for later use.
4) If the user is only interested in specific items and want to preview the effects placing them in their home or shop, then the user would be asked to provide a background picture where they want to put the items; Then user would select the items they are interested in and similar items in our database will be displayed with attached information.

5) User would select one from the recommended items and move the item on top of the background to see the live effect.

3. Implementation

We propose a workflow to automatically find similar individual furniture products to match the user selection of designed indoor decoration scheme, given one query image.

There would be three stages for this project:

1) Segment the image into several promising regions where each region contains one piece of furniture, such as sofa, chair, table or lamp. Extract all the furniture items from the query image and characterize /label each recognized individual furniture for later matching purposes.

2) Certain image retrieval techniques can be used to retrieve similar products from database and match the furniture items user choose [1][2]. Then display the most similar ones and their information to the user for reference.

3) Create a synthesized new image with the similar furniture items put on top of the decoration background and place it at the user specified location [3].

Reference

