ARShop: Cloud-based Augmented Reality for Shops

Motivation

- Provide mall owners cloud-based tools to use augmented reality in their malls and shops
- Provide shoppers to search for items in their shopping list and provide comments using AR

Method

Two-level clustering

Cluster of Spatial Features

Cluster of Visual Features

WIFI signal

WIFI Clusters

Spectral clustering

visually similar images

Shop owner

Take images

Add annotations

Retrieve similar Images & transfer annotations

Take an image

Shopper

Website

Server

App

Create a shop

WIFI clusters view

Visual feature clusters view

Annotation propagation

Experiments

- Vivocity (1500 images)
- National Gallery (1600 images)

CPU time profiling (1600 images)

<table>
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<tr>
<th>Preparation</th>
<th>WIFI clustering</th>
<th>Extracting features</th>
<th>kNN computation</th>
<th>Visual clustering</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 mins</td>
<td>3.5 mins</td>
<td>9.5 mins</td>
<td>18 hours</td>
<td>2.5 mins</td>
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40x speedup

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