Towards *Aesthetics*: a Photo Quality Assessment and Photo Selection System

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**Goal**: • Photo Evaluation • Composition Enhancement • Photo Selection

**Algorithm**

**Aesthetic Quality Assessment**

- Feature Extraction
  - Technical Features: Contrast, Background, Blurring, Simplicity
  - Perceptual Features: Symmetry, Composition, Consistency
  - Human Relationship Features: Face Closeness, Face Expression, Pose

- Score Prediction
  - Sparse Linear Regression
  - Training: Ground-truth collected by Amazon Mechanical Turk

**Aesthetics-based Photo Selection**

- **Initialization**: Pick the image with the highest aesthetic score
- **Iteration**: Select a photo that has the best combination of a high aesthetic score and low scene correlation and low face correlation with those in the previous selected photos

\[
\max_{i \in 1 \cdots E} \left[ a_i + \min_{j \in 1 \cdots E} \left( 1 - \text{SIM}(\mathbf{s}_i, \mathbf{s}_j) \right) + \min_{k \in 1 \cdots E} \left( 1 - \text{SIM}(\mathbf{f}_i, \mathbf{f}_k) \right) \right]
\]

**Composition Aesthetics-based Photo Editing**

- Face Detection
  - Compute Face Link Weights
  - PageRank Algorithm
  - Eliminate Unwanted Faces
  - Region Parameter
  - Best Parameter

**Experimental Results**

<table>
<thead>
<tr>
<th>Assessment Methods</th>
<th>RES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Random</td>
<td>317</td>
</tr>
<tr>
<td>Ours</td>
<td>228</td>
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</table>

<table>
<thead>
<tr>
<th>Cropping methods</th>
<th>User Votes</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Crop</td>
<td>12%</td>
</tr>
<tr>
<td>Picasa</td>
<td>37%</td>
</tr>
<tr>
<td>Ours</td>
<td>51%</td>
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