**Introduction**

- Input: A real-time image + the occasion for which the person wants to dress up.
- Output: 7 features of the person + an image as a suggestion for the attire.

**Dataset**

- The image dataset has been collected from Liu et al. [1].
- A survey was created to obtain the feature values for the images which were used as training data for the 8 models.
- Another set of dataset created by us to compare the accuracies.
- # images in survey data: 974
- # images in our data: 122

**Tasks**

- Data collection: Image + feature value
- Data cleaning: Removed noise, classified data into folders per ground truth.
- Data augmentation: Increased data 11 times
- Model Training: Last layer of Inception model trained and validated.
- Model testing: Tested on testing data.
- Deployment: Desktop application created.

**Related Work**

- Style-Me [2]: A score based fashion stylist application that uses artificial intelligence.
- Zolando’s and Google’s Project Muze [3]: TensorFlow and machine learning based fashion stylist where the user is the muse.

**System Design**

**Example Output**

- **Gender**—> male
- **Event**—> casual
- **Shape**—> rhomboid
- **Hair Length**—> short
- **Height**—> 5'10"
- **Hair Color**—> 
- **Skin Tone**—> White, Fair

**Experimentation**

<table>
<thead>
<tr>
<th># Iterations</th>
<th>Cross-entropy</th>
</tr>
</thead>
<tbody>
<tr>
<td>70K</td>
<td>0.5</td>
</tr>
<tr>
<td>90K</td>
<td>0.25</td>
</tr>
<tr>
<td>120K</td>
<td>0</td>
</tr>
</tbody>
</table>

**Technologies Used**

- Kivy: Python library used for UI creation.
- TensorFlow: A Python library used by inception model to create a neural network.
- Inception Model: Used to create the models.
- Convolutional Neural Network: CNN forms the core network of the inception model.
- Python: Used as the base language.

**Results**

<table>
<thead>
<tr>
<th>Model</th>
<th># classes</th>
<th>Survey data</th>
<th>Self created data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>2</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Hair Color</strong></td>
<td>24</td>
<td>53.7%</td>
<td>78.7%</td>
</tr>
<tr>
<td>Hair Length</td>
<td>5</td>
<td>65.1%</td>
<td>83.1%</td>
</tr>
<tr>
<td>Height</td>
<td>12</td>
<td>50.8%</td>
<td>77.8%</td>
</tr>
<tr>
<td>Men Shape</td>
<td>5</td>
<td>53.7%</td>
<td>78.3%</td>
</tr>
<tr>
<td>Women Shape</td>
<td>6</td>
<td>64.1%</td>
<td>84%</td>
</tr>
<tr>
<td>Skin Tone</td>
<td>6</td>
<td>60.4%</td>
<td>84.2%</td>
</tr>
<tr>
<td>Event</td>
<td>10</td>
<td>54.3%</td>
<td>87.1%</td>
</tr>
</tbody>
</table>

**Current and Future Work**

- Currently, the application is only for desktop computers.
- In the future, an android and an IOS app will be created using Kivy and the models will be trained on more and a better dataset.

**References**