APPENDIX
<table>
<thead>
<tr>
<th>Expression</th>
<th>Images</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surprise</td>
<td><img src="image1" alt="Images" /> <img src="image2" alt="Images" /> <img src="image3" alt="Images" /> <img src="image4" alt="Images" /></td>
</tr>
<tr>
<td>Sadness</td>
<td><img src="image5" alt="Images" /> <img src="image6" alt="Images" /> <img src="image7" alt="Images" /> <img src="image8" alt="Images" /></td>
</tr>
<tr>
<td>Happiness</td>
<td><img src="image9" alt="Images" /> <img src="image10" alt="Images" /> <img src="image11" alt="Images" /> <img src="image12" alt="Images" /></td>
</tr>
<tr>
<td>Fear</td>
<td><img src="image13" alt="Images" /> <img src="image14" alt="Images" /> <img src="image15" alt="Images" /> <img src="image16" alt="Images" /></td>
</tr>
<tr>
<td>Disgust</td>
<td><img src="image17" alt="Images" /> <img src="image18" alt="Images" /> <img src="image19" alt="Images" /> <img src="image20" alt="Images" /></td>
</tr>
<tr>
<td>Anger</td>
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</tr>
<tr>
<td>Normal</td>
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<tr>
<td>emotion</td>
<td>faces</td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
</tr>
<tr>
<td>surprise</td>
<td>![image]</td>
</tr>
<tr>
<td>sadness</td>
<td>![image]</td>
</tr>
<tr>
<td>happiness</td>
<td>![image]</td>
</tr>
<tr>
<td>fear</td>
<td>![image]</td>
</tr>
<tr>
<td>disgust</td>
<td>![image]</td>
</tr>
<tr>
<td>anger</td>
<td>![image]</td>
</tr>
<tr>
<td>normal</td>
<td>![image]</td>
</tr>
<tr>
<td>Emotion</td>
<td>Image 1</td>
</tr>
<tr>
<td>-------------</td>
<td>---------</td>
</tr>
<tr>
<td>Surprise</td>
<td><img src="image1" alt="Image" /></td>
</tr>
<tr>
<td>Sadness</td>
<td><img src="image4" alt="Image" /></td>
</tr>
<tr>
<td>Happiness</td>
<td><img src="image7" alt="Image" /></td>
</tr>
<tr>
<td>Fear</td>
<td><img src="image10" alt="Image" /></td>
</tr>
<tr>
<td>Disgust</td>
<td><img src="image13" alt="Image" /></td>
</tr>
<tr>
<td>Anger</td>
<td><img src="image16" alt="Image" /></td>
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<tr>
<td>Normal</td>
<td><img src="image19" alt="Image" /></td>
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<tr>
<td>emotion</td>
<td>1</td>
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<tr>
<td>----------</td>
<td>---</td>
</tr>
<tr>
<td>surprise</td>
<td>![image]</td>
</tr>
<tr>
<td>sadness</td>
<td>![image]</td>
</tr>
<tr>
<td>happiness</td>
<td>![image]</td>
</tr>
<tr>
<td>fear</td>
<td>![image]</td>
</tr>
<tr>
<td>disgust</td>
<td>![image]</td>
</tr>
<tr>
<td>anger</td>
<td>![image]</td>
</tr>
<tr>
<td>normal</td>
<td>![image]</td>
</tr>
</tbody>
</table>
APPENDIX-B

Following are a few sentences used by female and male subjects at the time of video recording in different emotions.

<table>
<thead>
<tr>
<th>Emotions</th>
<th>Hindi Sentences used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>अच्छा ठीक है।</td>
</tr>
<tr>
<td>Anger</td>
<td>अरे हट।</td>
</tr>
<tr>
<td>Disgust</td>
<td>अरे रे कितना गंदा है।</td>
</tr>
<tr>
<td>Fear</td>
<td>अरे रे मतमारो।</td>
</tr>
<tr>
<td>Happy</td>
<td>अरे वाह, मजा आ गया।</td>
</tr>
<tr>
<td>Sad</td>
<td>अरे रे बड़ा बुरा हुआ।</td>
</tr>
<tr>
<td>Surprise</td>
<td>अच्छा! ऐसा हुआ।</td>
</tr>
</tbody>
</table>
### APPENDIX-C

Table C.1 Mean of normalised facial feature point distances (Female)

#### UPPER PART OF THE FACE

<table>
<thead>
<tr>
<th>Emotion</th>
<th>DR_1-7</th>
<th>DR_2-9</th>
<th>DR_3-8</th>
<th>DL_4-11</th>
<th>DL_5-13</th>
<th>DL_6-12</th>
<th>DL_8-10</th>
<th>DL_13-14</th>
<th>DRL_3-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>0.1414</td>
<td>0.1948</td>
<td>0.1619</td>
<td>0.1610</td>
<td>0.1908</td>
<td>0.1402</td>
<td>0.0977</td>
<td>0.1021</td>
<td>0.2953</td>
</tr>
<tr>
<td>Anger</td>
<td>0.1268</td>
<td>0.1535</td>
<td>0.1381</td>
<td>0.1318</td>
<td>0.1515</td>
<td>0.1304</td>
<td>0.0840</td>
<td>0.0845</td>
<td>0.2432</td>
</tr>
<tr>
<td>Disgust</td>
<td>0.1297</td>
<td>0.1647</td>
<td>0.1392</td>
<td>0.1300</td>
<td>0.1734</td>
<td>0.1313</td>
<td>0.0718</td>
<td>0.0654</td>
<td>0.2719</td>
</tr>
<tr>
<td>Fear</td>
<td>0.1436</td>
<td>0.1983</td>
<td>0.2034</td>
<td>0.2030</td>
<td>0.2021</td>
<td>0.1434</td>
<td>0.1101</td>
<td>0.1108</td>
<td>0.2967</td>
</tr>
<tr>
<td>Happiness</td>
<td>0.1464</td>
<td>0.1991</td>
<td>0.1760</td>
<td>0.1750</td>
<td>0.1999</td>
<td>0.1430</td>
<td>0.0980</td>
<td>0.1025</td>
<td>0.3035</td>
</tr>
<tr>
<td>Sadness</td>
<td>0.1366</td>
<td>0.1833</td>
<td>0.1806</td>
<td>0.1795</td>
<td>0.1795</td>
<td>0.1370</td>
<td>0.0922</td>
<td>0.0950</td>
<td>0.2802</td>
</tr>
<tr>
<td>Surprise</td>
<td>0.1546</td>
<td>0.2246</td>
<td>0.2027</td>
<td>0.1991</td>
<td>0.2099</td>
<td>0.1524</td>
<td>0.1398</td>
<td>0.1333</td>
<td>0.3044</td>
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#### MIDDLE PART OF THE FACE

<table>
<thead>
<tr>
<th>Emotion</th>
<th>DR_8-15</th>
<th>DL_11-16</th>
<th>DR_15-18</th>
<th>DL_16-19</th>
<th>DR_8-18</th>
<th>DL_11-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>0.2729</td>
<td>0.2817</td>
<td>0.2550</td>
<td>0.2547</td>
<td>0.5246</td>
<td>0.5313</td>
</tr>
<tr>
<td>Anger</td>
<td>0.2744</td>
<td>0.2847</td>
<td>0.2864</td>
<td>0.2740</td>
<td>0.5234</td>
<td>0.5275</td>
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<tr>
<td>Disgust</td>
<td>0.2561</td>
<td>0.2612</td>
<td>0.2549</td>
<td>0.2578</td>
<td>0.5050</td>
<td>0.5136</td>
</tr>
<tr>
<td>Fear</td>
<td>0.2857</td>
<td>0.2928</td>
<td>0.2761</td>
<td>0.2793</td>
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<td>0.5672</td>
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<td>Happiness</td>
<td>0.2795</td>
<td>0.2847</td>
<td>0.2835</td>
<td>0.2643</td>
<td>0.5255</td>
<td>0.5352</td>
</tr>
<tr>
<td>Sadness</td>
<td>0.2750</td>
<td>0.2844</td>
<td>0.2713</td>
<td>0.2771</td>
<td>0.5436</td>
<td>0.5588</td>
</tr>
<tr>
<td>Surprise</td>
<td>0.2820</td>
<td>0.2942</td>
<td>0.2839</td>
<td>0.2856</td>
<td>0.5616</td>
<td>0.5772</td>
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</table>

#### LOWER PART OF THE FACE

<table>
<thead>
<tr>
<th>Emotion</th>
<th>DC_17-20</th>
<th>DR_17-18</th>
<th>DL_17-19</th>
<th>DRL_18-19</th>
<th>DC_20-21</th>
<th>DC_21-22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>0.1746</td>
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<td>0.4147</td>
<td>0.6340</td>
<td>0.2332</td>
<td>0.2079</td>
</tr>
<tr>
<td>Anger</td>
<td>0.1626</td>
<td>0.4132</td>
<td>0.4151</td>
<td>0.6597</td>
<td>0.1841</td>
<td>0.2007</td>
</tr>
<tr>
<td>Disgust</td>
<td>0.1437</td>
<td>0.4024</td>
<td>0.4067</td>
<td>0.6571</td>
<td>0.1995</td>
<td>0.2284</td>
</tr>
<tr>
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<td>0.4271</td>
<td>0.6175</td>
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<td>0.2002</td>
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<tr>
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<td>0.4300</td>
<td>0.4271</td>
<td>0.7035</td>
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<td>0.1803</td>
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<td>0.4256</td>
<td>0.6045</td>
<td>0.2184</td>
<td>0.2150</td>
</tr>
<tr>
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<td>0.4203</td>
<td>0.4230</td>
<td>0.5762</td>
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### Table C.2 Mean of normalised facial feature point distances (Male)

<table>
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<tr>
<th>Emotion</th>
<th>Upper Part of the Face</th>
<th>Middle Part of the Face</th>
<th>Lower Part of the Face</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>0.1364</td>
<td>0.1681</td>
<td>0.1476</td>
</tr>
<tr>
<td>Anger</td>
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<td>0.1503</td>
<td>0.1293</td>
</tr>
<tr>
<td>Disgust</td>
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<td>0.1400</td>
<td>0.1068</td>
</tr>
<tr>
<td>Fear</td>
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<td>0.1761</td>
<td>0.1587</td>
</tr>
<tr>
<td>Happiness</td>
<td>0.1423</td>
<td>0.1940</td>
<td>0.1656</td>
</tr>
<tr>
<td>Sadness</td>
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<td>0.1608</td>
<td>0.1549</td>
</tr>
<tr>
<td>Surprise</td>
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<td>0.2095</td>
<td>0.1916</td>
</tr>
<tr>
<td></td>
<td>0.2680</td>
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<td>0.2379</td>
<td>0.2640</td>
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<td>0.2846</td>
<td>0.2720</td>
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<td>0.2830</td>
<td>0.2846</td>
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<tr>
<td>Sadness</td>
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<td>0.2822</td>
<td>0.2705</td>
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<td>0.2888</td>
<td>0.2942</td>
</tr>
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<td>0.4347</td>
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<td>0.4256</td>
<td>0.4555</td>
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<td>0.4006</td>
<td>0.4239</td>
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<td>0.4471</td>
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</table>
Table C.3 Standard Deviation for normalised facial feature point distances (Female)

### UPPER PART OF THE FACE

<table>
<thead>
<tr>
<th>Emotion</th>
<th>DR₁-₇</th>
<th>DR₂-₉</th>
<th>DR₃-₈</th>
<th>DL₄-₁₁</th>
<th>DL₅-₁₃</th>
<th>DL₆-₁₂</th>
<th>DR₉-₁₀</th>
<th>DL₁₃-₁₄</th>
<th>DRL₃-₄</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>0.0191</td>
<td>0.0276</td>
<td>0.0339</td>
<td>0.0321</td>
<td>0.0337</td>
<td>0.0237</td>
<td>0.0191</td>
<td>0.0193</td>
<td>0.0692</td>
</tr>
<tr>
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<td>0.0317</td>
<td>0.0447</td>
<td>0.0348</td>
<td>0.0382</td>
<td>0.0405</td>
<td>0.0356</td>
<td>0.0207</td>
<td>0.0204</td>
<td>0.0742</td>
</tr>
<tr>
<td>Disgust</td>
<td>0.0215</td>
<td>0.0394</td>
<td>0.0509</td>
<td>0.0429</td>
<td>0.0379</td>
<td>0.0262</td>
<td>0.0226</td>
<td>0.0222</td>
<td>0.0791</td>
</tr>
<tr>
<td>Fear</td>
<td>0.0262</td>
<td>0.0461</td>
<td>0.0502</td>
<td>0.0564</td>
<td>0.0465</td>
<td>0.0284</td>
<td>0.0303</td>
<td>0.0304</td>
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</tr>
<tr>
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<td>0.0455</td>
<td>0.0457</td>
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</tr>
<tr>
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<td>0.0421</td>
<td>0.0416</td>
<td>0.0413</td>
<td>0.0307</td>
<td>0.0170</td>
<td>0.0177</td>
<td>0.0712</td>
</tr>
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</table>

### MIDDLE PART OF THE FACE

<table>
<thead>
<tr>
<th>Emotion</th>
<th>DR₈-₁₅</th>
<th>DL₁₁-₁₅</th>
<th>DR₁₅-₁₈</th>
<th>DL₁₅-₁₉</th>
<th>DR₁₈-₁₉</th>
<th>DL₁₉-₁₉</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>0.0384</td>
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<td>0.0467</td>
<td>0.0454</td>
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<td>0.0667</td>
</tr>
<tr>
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<td>0.0403</td>
<td>0.0452</td>
<td>0.0537</td>
<td>0.0807</td>
<td>0.0798</td>
<td>0.0777</td>
</tr>
<tr>
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<td>0.0681</td>
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<td>0.0959</td>
</tr>
<tr>
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<td>0.0493</td>
<td>0.0603</td>
<td>0.0688</td>
<td>0.0991</td>
<td>0.1062</td>
</tr>
<tr>
<td>Happiness</td>
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<td>0.0479</td>
<td>0.0539</td>
<td>0.0787</td>
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</tr>
<tr>
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</tr>
<tr>
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<td>0.0750</td>
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<td>0.0992</td>
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</table>

### LOWER PART OF THE FACE

<table>
<thead>
<tr>
<th>Emotion</th>
<th>DC₁₇-₂₀</th>
<th>DR₁₇-₁₈</th>
<th>DL₁₇-₁₉</th>
<th>DRL₁₈-₁₉</th>
<th>DC₂₀-₂₁</th>
<th>DC₂₁-₂₂</th>
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</thead>
<tbody>
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<td>0.0684</td>
<td>0.0592</td>
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</tr>
<tr>
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<td>0.0681</td>
<td>0.0791</td>
<td>0.0777</td>
<td>0.0405</td>
<td>0.0869</td>
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<tr>
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### Table C.4 Standard Deviation for normalised facial feature point distances (Male)

**UPPER PART OF THE FACE**

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<th>DL$_{5.13}$</th>
<th>DL$_{6.12}$</th>
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<th>DL$_{8.14}$</th>
<th>DRL$_{3.4}$</th>
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**MIDDLE PART OF THE FACE**

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**LOWER PART OF THE FACE**

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## Table D.1 Standard Deviation for Speech Parameters (Female)

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<th>F₂ (Hz)</th>
<th>F₃ (Hz)</th>
<th>F₄ (Hz)</th>
<th>Peak Power at F₁ (dB)</th>
<th>Peak Power at F₂ (dB)</th>
<th>Peak Power at F₃ (dB)</th>
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## Table D.2 Standard Deviation for Speech Parameters (Male)

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<th>Peak Power at F₁ (dB)</th>
<th>Peak Power at F₂ (dB)</th>
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### APPENDIX-E

#### Table E.1 Sample Speech Data Parameters (female) For Anger Emotion

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<th>F4 (Hz)</th>
<th>Peak Power at F1 (dB)</th>
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### APPENDIX-E

#### Table E.2 Sample Speech Data Parameters (Male)

**For Anger Emotion**

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