## **Appendix**

In this appendix, we provide the results obtained from this experiment.

**Part A:** At first, for feature visualization, randomly selected four videos were used from the validation dataset. Also, we gave attention to the fact that if that selected video is repeated in the training or validation dataset. If so, that information is also noted to gain more understanding regarding the output of the model.

**Part B:** For trait-wise visualization, we took one trait and sorted the scores in descending order at the second stage. Then we divided it into groups; >=0.8, 0.8-0.6, 0.6-0.4, 0.4-0.2 and less than 0.2. Then from each group selected a few random videos. Then, we extracted 100 frames from the selected video, calculated the model output for all 100 frames, and selected the frame that scores the highest value for feature visualization. The same process was followed for all the traits. A few examples from the experimental study are summarized in Table 1, Table2, Table 3, Table 4, and Table 5.

All the outputs are organized as follows:

1. Original Image
2. Grad-CAM output
3. Guided Backpropagation output
4. Guided Backpropagation output blended with the original image
5. Guided Grad-CAM output
6. Guided Grad-CAM output blended with the original image

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Trait with predicted value and frame number | Original Image | Grad-CAM | Guided Backpropagation | Guided Backpropagation + original image | Guided Grad-CAM output | Guided Grad-CAM + original image |
| E:  Predicted value: 0.70512  Frame: 38 | A person with the mouth open  Description automatically generated with low confidence |  | A picture containing invertebrate, arthropod  Description automatically generated | A close up of a plant  Description automatically generated with medium confidence | A close-up of a person's face  Description automatically generated with low confidence | A picture containing bell jar, bathroom  Description automatically generated |
| N: Predicted Value:  0.72257  Frame:47 | A person with her mouth open  Description automatically generated with medium confidence |  |  |  |  |  |
| A:  Predicted Value:  0.55356  Frame:73 | A person with the mouth open  Description automatically generated with low confidence |  |  |  |  | A picture containing clothing, dress  Description automatically generated |
| C:  Predicted Value: 0.68211  Frame: 48 | A person with the mouth open  Description automatically generated with low confidence |  | A spider on a web  Description automatically generated with medium confidence |  |  | A picture containing clothing, dress, skirt  Description automatically generated |
| O:  Predicted value:  0.76205  Frame: 78 | A picture containing clothing  Description automatically generated |  | A picture containing hydrozoan  Description automatically generated | A close up of a flower  Description automatically generated with low confidence |  | A picture containing wall, bell jar  Description automatically generated |

## Part A: All Traits Features Visualization

### Video file name: Gdv79afXNKE.004

**Ground truth values for selcted video**

Video file name E N A C O

Gdv79afXNKE.004.mp4 0.8037383 0.9166667 0.7802198 0.74757284 0.96666664

**Other validation instances:**

Video file name E N A C O

Gdv79afXNKE.000.mp4 0.635514 0.7708333 0.5494506 0.5825243 0.7111111

**Other training instances:**

Video file name E N A C O

Gdv79afXNKE.003.mp4 0.78504676 0.6354167 0.5494506 0.6407767 0.6888889

Gdv79afXNKE.005.mp4 0.6168224 0.6979167 0.47252747 0.65048546 0.74444443

Fig. 1. Visualization techniques output for the video Gdv79afXNKE.004

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Trait with predicted value and frame number | Original Image | Grad-CAM | Guided Backpropagation | Guided Backpropagation + original image | Guided Grad-CAM output | Guided Grad-CAM + original image |
| E:  Predicted Value: 0.54112  Frame: 49 | A picture containing wall, person, indoor, person  Description automatically generated | A picture containing person, dark  Description automatically generated | A close up of a spider  Description automatically generated with low confidence |  | A picture containing invertebrate, arthropod, spider, hydrozoan  Description automatically generated | A picture containing wall, indoor, bathroom  Description automatically generated |
| N:  Predicted Value:  0.41646  Frame: 45 | A picture containing wall, person, indoor, black  Description automatically generated | A picture containing person, dark  Description automatically generated | A close up of a spider  Description automatically generated with low confidence | A picture containing text, hydrozoan  Description automatically generated | A picture containing spider  Description automatically generated | A picture containing wall, person  Description automatically generated |
| A:  Predicted Value: 0.49967  Frame: 19 | A picture containing wall, indoor, person, black  Description automatically generated | A picture containing person, dark  Description automatically generated | A close up of a spider  Description automatically generated with low confidence |  |  | A person wearing headphones  Description automatically generated with low confidence |
| C:  Predicted Value:  0.50387  Frame: 29 | A picture containing wall, indoor, person, black  Description automatically generated | A picture containing person, dark  Description automatically generated |  | A picture containing bell jar  Description automatically generated | A close up of a person's face  Description automatically generated with low confidence | A picture containing wall, bathroom  Description automatically generated |
| O:  Predicted Value  0.61439  Frame:27 | A picture containing wall, indoor, person, black  Description automatically generated | A picture containing parking, dark  Description automatically generated | A close up of a plant  Description automatically generated with low confidence |  | A picture containing hydrozoan  Description automatically generated | A picture containing wall, indoor, bathroom  Description automatically generated |

### Video file name: 6NjuNY4LfQc.001

**Ground truth values for selcted video**

Video file name E N A C O

6NjuNY4LfQc.001.mp4 0.7009346 0.7708333 0.63736266 0.5436893 0.7777778

**Other validation instances:**

Video file name E N A C O

6NjuNY4LfQc.002.mp4 0.34579438 0.30208334 0.41758242 0.33009708 0.43333334

**Other training instances:**

Video file name E N A C O

6NjuNY4LfQc.004.mp4 0.5233645 0.35416666 0.52747256 0.4854369 0.53333336

Fig. 2. Visualization techniques output for the video 6NjuNY4LfQc.001

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Trait with predicted value and frame number | Original Image | Grad-CAM | Guided Backpropagation | Guided Backpropagation + original image | Guided Grad-CAM output | Guided Grad-CAM + original image |
| E:  Predicted Value: 0.62160  Frame: 95 | A person with the tongue out  Description automatically generated with medium confidence | A picture containing person, wall, standing  Description automatically generated | A close up of a plant  Description automatically generated with low confidence | A plant in a pot  Description automatically generated with low confidence | A picture containing hydrozoan  Description automatically generated | A person wearing a mask  Description automatically generated with medium confidence |
| N:  Predicted Value:  0.65685  Frame: 59 | A picture containing wall, person, indoor, person  Description automatically generated | A picture containing person, standing  Description automatically generated | A picture containing invertebrate, hydrozoan  Description automatically generated | A picture containing hydrozoan  Description automatically generated | A picture containing night sky  Description automatically generated | A person wearing a mask  Description automatically generated with low confidence |
| A:  Predicted Value:  0.67680  Frame:95 | A person with the tongue out  Description automatically generated with medium confidence | A picture containing wall, person, indoor, standing  Description automatically generated | A picture containing hydrozoan  Description automatically generated | A picture containing text  Description automatically generated | A picture containing night sky  Description automatically generated | A person wearing a mask  Description automatically generated with medium confidence |
| C:  Predicted Value:  0.60250  Frame: 31 | A person with his mouth open  Description automatically generated with low confidence | A picture containing person, wall, standing  Description automatically generated | A close up of a plant  Description automatically generated with low confidence | A picture containing text  Description automatically generated | A picture containing flower, plant  Description automatically generated | A picture containing wall, person, standing  Description automatically generated |
| O:  Predicted Value:  0.59444  Frame: 39 | A person sticking his tongue out  Description automatically generated | A picture containing person, wall, person, standing  Description automatically generated | A close up of a plant  Description automatically generated with low confidence | A picture containing bathroom  Description automatically generated |  | A picture containing wall, person, person, standing  Description automatically generated |

### Video file name: blAjqQ0ja8Q.002

**Ground truth values for the selected video**

Video file name E N A C O

blAjqQ0ja8Q.002.mp4 0.5233645 0.6145833 0.62637365 0.4854369 0.5

**Other validation instances:**

Video file name E N A C O

blAjqQ0ja8Q.001.mp4 0.5140187 0.6770833 0.7912088 0.70873785 0.63333

blAjqQ0ja8Q.004.mp4 0.49532712 0.53125 0.6813187 0.55339810 0.64444

**Other training instances:**

Video file name E N A C O

blAjqQ0ja8Q.005.mp4 0.6168224 0.5208333 0.6703297 0.5048544 0.57777

blAjqQ0ja8Q.003.mp4 0.46728972 0.5 0.5494506 0.61165047 0.54444

Fig. 3. Visualization techniques output for the video blAjqQ0ja8Q.002

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Trait with predicted value and frame number | Original Image | Grad-CAM | Guided Backpropagation | Guided Backpropagation + original image | Guided Grad-CAM output | Guided Grad-CAM + original image |
| E:  Predicted Value:  0.34999  Frame:93 | A picture containing wall, indoor, person, person  Description automatically generated | A picture containing wall, person, indoor, person  Description automatically generated |  | A picture containing text  Description automatically generated |  | A picture containing wall, person, indoor  Description automatically generated |
| N:  Predicted Value: 0.37999  Frame:85 | A person making a face for the camera  Description automatically generated with medium confidence | A picture containing person, wall, indoor, person  Description automatically generated | A close up of a spider  Description automatically generated with low confidence | A picture containing text, wall, indoor  Description automatically generated |  | A hand holding a rose  Description automatically generated with low confidence |
| A:  Predicted Value:  0.46780  Frame: 79 | A picture containing wall, person, indoor, person  Description automatically generated | A picture containing wall, person, indoor, person  Description automatically generated |  | A picture containing wall  Description automatically generated |  | A hand holding a bouquet of flowers  Description automatically generated with low confidence |
| C:  Predicted Value:  0.66462  Frame: 6 | A person making a face  Description automatically generated with low confidence | A picture containing wall, person, indoor, game  Description automatically generated |  | A picture containing text, wall  Description automatically generated |  | A picture containing wall, indoor, person  Description automatically generated |
| O:  Predicted Value:  0.39927  Frame: 90 | A person making a face  Description automatically generated with low confidence | A picture containing wall, person, indoor, person  Description automatically generated | A picture containing arthropod, invertebrate  Description automatically generated | A picture containing text, wall  Description automatically generated | A picture containing hydrozoan  Description automatically generated | A hand holding a bouquet of flowers  Description automatically generated |

### Video file name: okSmKH2k5lE.004

**Ground truth values for the selected video**

Video file name E N A C O

okSmKH2k5lE.004.mp4 0.14018692 0.27083334 0.2967033 0.49514562 0.21111111

**Other validation instances:**

Video file name E N A C O

okSmKH2k5lE.003.mp4 0.3084112 0.35416666 0.5824176 0.592233 0.37777779

okSmKH2k5lE.000.mp4 0.08411215 0.21875 0.25274727 0.3592233 0.2777778

**Other training instances:**

Video file name E N A C O

okSmKH2k5lE.002.mp4 0.20560747 0.36458334 0.3956044 0.69902915 0.35555556

Fig. 4. Visualization techniques output for the video okSmKH2k5lE.004

## **Part B**

For the following tables (Table 1, Table 2, Table 3, Table 4, and Table 5) images are orgnaized as follows:

1. Original Image – (A)
2. Grad-CAM output – (B)
3. Guided Backpropagation output – (C)
4. Guided Backpropagation output blended with the original image– (D)
5. Guided Grad-CAM output –(E)
6. Guided Grad-CAM output blended with the original image–(F)

## **Trait-Wise Visualization**

## **Extraversion**

Table 1: Results of Extraversion Trait

|  |  |  |  |
| --- | --- | --- | --- |
| Trait score greater than 0.8 | Video file name : p1ORMiJ0fPU.000 Ground Truth Value: 0.831776  Predicted Value: 0.70249  Frame: 96  **The same subject is available in the training dataset with ground truth values:** 0.766355, 0.607477 | A picture containing person, electronic  Description automatically generatedA picture containing person, wall, indoor, person  Description automatically generatedA picture containing coelenterate, hydrozoan  Description automatically generatedA picture containing hydrozoan  Description automatically generatedA picture containing wall  Description automatically generated (A) (B) (C) (D) (E) (F) | Grad-CAM identified eye, eyebrows, and chin areas while Guided Backpropagation identified the edges in the face area with non-facial information. |
| Video file name: 85isLsZHZpo.005 Ground Truth Value: 0.8598131  Predicted Value: 0.68891  Frame: 3 | (A) (B) (C) (D) (E) (F) A picture containing coelenterate, hydrozoan  Description automatically generatedA picture containing wall, bathroom, indoor, toothbrush  Description automatically generatedA close up of a plant  Description automatically generated with low confidenceA picture containing person  Description automatically generated**A person with her tongue out  Description automatically generated with medium confidence** | Grad-CAM identified eye, chin, and hair. Guided Backpropagation identified the edges in the face area with non-facial features, such as dress strips. |
| Trait score 0.8-0.6 | Video file name: BmDClgdWlH4.005 Ground Truth Value: 0.7757009  Predicted Value: 0.80203  Frame: 25  **The same subject is available in the training dataset with ground truth values:** 0.8130841, 0.7196262, 0.831776 | (A) (B) (C) (D) (E) (F) A person wearing a mask  Description automatically generated with low confidenceA picture containing invertebrate  Description automatically generatedA picture containing text  Description automatically generatedA close up of a plant  Description automatically generated with low confidenceA picture containing wall, person, indoor  Description automatically generated**A person with the mouth open  Description automatically generated with medium confidence** | Grad-CAM identified forehead, eyebrows, and chin areas while Guided Backpropagation identified the edges in the face area with background features. |
| Video file name: XQZ5M9oLkXw.004 Ground Truth Value: 0.682243  Predicted Value: 0.59642  Frame: 13  **The same subject is available in the training dataset with ground truth values:** 0.49532712, 0.49532712, 0.42056075 | A person wearing a mask  Description automatically generated with low confidenceA picture containing hydrozoan  Description automatically generatedA picture containing person  Description automatically generatedA close up of a spider  Description automatically generated with medium confidenceA picture containing person, person, wearing, suit  Description automatically generated**A picture containing person, clothing, person, suit  Description automatically generated** (A) (B) (C) (D) (E) (F) | Grad-CAM identified forehead and eyebrows while Guided Backpropagation identified the edges in the face area. |
| Video file name: mZ2CHgzwDt0.004 Ground Truth Value: 0.6728972  Predicted output: 0.69833  Frame: 49  **Same subject in the Training dataset with ground truth values**  mZ2CHgzwDt0.000: 0.682243 | A picture containing text, bathroom  Description automatically generatedA close-up of a bug  Description automatically generated with low confidenceA picture containing text  Description automatically generatedA picture containing text  Description automatically generatedA person smiling with buildings in the background  Description automatically generated with low confidence (A) (B) (C) (D) (E) (F) | Grad-CAM identified forehead, eyebrows, and some background information, while Guided Backpropagation mainly identified the edges in the face area with background features. |
| Trait score 0.6-0.4 | Video file name: YygvfVxOWP8.002 Ground Truth Value: 0.60747665  Predicted Value: 0.46773  Frame: 61  **The same subject is available in the training dataset with ground truth values:** 0.45794392, 0.40186915s | A picture containing wall, indoor, glass, bell jar  Description automatically generatedA picture containing invertebrate  Description automatically generatedA picture containing person, indoor  Description automatically generated (A) (B) (C) (D) (E) (F) A picture containing wall, indoor  Description automatically generatedA person with the mouth open  Description automatically generated with low confidence | Grad-CAM identified eye, chin areas while Guided Backpropagation identified the edges in the face area with background features. |
| Video file name: jVGTEDAYWZ8.002 Ground Truth value: 0.607477  Predicted Value: 0.55723  Frame: 48  **The same subject is available in the training dataset with ground truth values:** 0.46728972, 0.60747665 | (A) (B) (C) (D) (E) (F) **A picture containing text, person, indoor, person  Description automatically generated**A picture containing person  Description automatically generatedA picture containing wall, indoor  Description automatically generatedA picture containing text  Description automatically generated | Grad-CAM identified forehead and non-facial features (dress) with background information. Guided Backpropagation identified the edges in the face area with background features. Guided backpropagation highlighted the edges of the non-facial areas than facial areas. |
| Video file name: FkzVX7SQ9wE.003 Ground Truth Value: 0.58878505  Predicted Value: 0.55258  Frame: 60  **The same subject is available in the training dataset with ground truth values:** 0.5233645, 0.5420561, 0.57009345 | (A) (B) (C) (D) (E) (F) A person holding a plant  Description automatically generated with low confidenceA close up of a plant  Description automatically generated with low confidenceA picture containing text, person, person, male  Description automatically generated**A picture containing banana, person, outdoor  Description automatically generated**A picture containing text  Description automatically generated | In this instance, even though the predicted output was not much different from the target, Grad-CAM failed to identify facial features as the main contributors to the output. However, in Guided Backpropagation, the edges of the face area are highlighted with the background information. |
| Trait score 0.4-0.2 | Video file name: \_RfHkyf68Zs.000 Ground truth value: 0.39252338  Predicted Value: 0.488511  Frame:36 | (A) (B) (C) (D) (E) (F) A picture containing wall, person, indoor  Description automatically generatedA picture containing plant  Description automatically generatedA person with a rainbow painted on the face  Description automatically generated with low confidence**A person with long hair  Description automatically generated with medium confidence** | Grad-CAM identified nose and neck areas while Guided Backpropagation mainly identified the edges in the face area with non-facial features. |
| Video file name: U2RemWUyjts.001 Ground truth value: 0.36448598  Predicted Value: 0.30657  Frame: 96  **The same subject is available in the training dataset with ground truth values:** 0.27102804, 0.2990654 | (A) (B) (C) (D) (E) (F) A picture containing glass  Description automatically generatedA picture containing text, person  Description automatically generatedA picture containing text  Description automatically generated**A person with the mouth open  Description automatically generated with low confidence** | Grad-CAM identified eye, eyebrows, and nose areas while Guided Backpropagation identified the edges in the face area. Both the techniques are affected by non-facial and background features. |
| Trait score less than 0.2 | Video file name: f7togdqxEoo.005 Ground truth value: 0.1495327  Predicted Value: 0.26577  Frame: 73 | A picture containing hydrozoan  Description automatically generatedA picture containing text  Description automatically generatedA picture containing hydrozoan  Description automatically generatedA picture containing person, indoor  Description automatically generated**A person wearing a red hat  Description automatically generated with medium confidence** (A) (B) (C) (D) (E) (F) A picture containing wall, bell jar  Description automatically generated | Grad-CAM identified eye, eyebrows, mouth, and chin areas while Guided Backpropagation mainly identified the edges in the face area with background features. |
| Video file name: 2DZb5yIc6Fg.005 Ground truth value: 0.01869159  Predicted value: 0.21605  Frame: 96  **The same subject is available in the training dataset with ground truth values:** 0.08411, 0.17757 | (A) (B) (C) (D) (E) (F) A picture containing text, wall  Description automatically generatedA picture containing invertebrate  Description automatically generatedA picture containing wall  Description automatically generatedA close up of a plant  Description automatically generated with low confidenceA picture containing text, person  Description automatically generated**A picture containing text, person, person, wall  Description automatically generated** | Grad-CAM identified nose, mouth, and eye areas, but the main features are non-facial features. Guided Backpropagation identified the edges in the face area with non-facial features. |

## **Neuroticism**

Table 2:Results of Neuroticism Trait

|  |  |  |  |
| --- | --- | --- | --- |
| Trait score greater than 0.8 | Video file name: xrxAyO8pKUo.004 Ground truth value: 0.895833  Predicted value: 0.68947  Frame: 13  **The same subject is available in the validation dataset with ground truth values:** 0.72916, 0.60416  **The same subject is available in the training dataset with ground truth values:** 0.85416, 0.6979167 | (A) (B) (C) (D) (E) (F) A close up of a person's face  Description automatically generated with low confidenceA picture containing invertebrate  Description automatically generatedA picture containing indoor  Description automatically generated**A picture containing indoor, person, clothing, hair  Description automatically generated** | Grad-CAM identified forehead, eyebrows, and eye areas while Guided Backpropagation identified the edges in the face area with background features. |
| Video file name: 7GRC7XjGzX8.000 Ground truth value: 0.802083  Predicted Value: 0.66369  Frame: 13  **The same subject is available in the training dataset with ground truth values:** 0.6770833, 0.71875 | A picture containing person, person, standing  Description automatically generatedA close-up of a person's face  Description automatically generated with low confidenceA picture containing glass  Description automatically generatedA person with flowers on their head  Description automatically generated with medium confidenceA picture containing text  Description automatically generated (A) (B) (C) (D) (E) (F) **A person with his hands in his pockets in front of a yellow background  Description automatically generated with medium confidence** | Grad-CAM identified eye, eyebrows, nose, and forehead areas while Guided Backpropagation identified the edges in the face area with few background features. |
| Trait score 0.8-0.6 | Video file name: CpmR-91GxmY.003 Ground truth value: 0.78125  Predicted value: 0.73354  Frame:6  **The same subject is available in the validation dataset with ground truth values:** 0.84375  **The same subject is available in the training dataset with ground truth values:** 0.8958333, 0.562, 0.8333333, 0.8541667 | (A) (B) (C) (D) (E) (F) A picture containing colorful  Description automatically generatedA picture containing wall, indoor  Description automatically generatedA picture containing text, glass  Description automatically generatedA person with the mouth open  Description automatically generated with low confidence | Grad-CAM identified forehead, hair, nose, and chin areas, while Guided Backpropagation identified the edges in the face area with non-facial features with little background information. |
| Video file name: YuoLr4xDvbE.003 **Validation dataset**  Ground truth value: 0.697917  Predicted value: 0.67519  Frame: 65  **The same subject is available in the validation dataset with ground truth values:** 0.6458333  **The same subject is available in the training dataset with ground truth values:** 0.6875, 0.6458333, 0.5416667, 0.6666667 | A person wearing a mask  Description automatically generated with medium confidenceA picture containing night sky  Description automatically generatedA close up of a plant  Description automatically generated with low confidenceA picture containing person, wall, indoor  Description automatically generated (A) (B) (C) (D) (E) (F) **A person with long hair  Description automatically generated with low confidence** | Grad-CAM identified eye, eyebrows, and forehead areas while Guided Backpropagation identified the edges in the face area with background features. |
| Trait score 0.6-0.4 | Video file name: DSYiLCGNDP0.000 **Validation dataset**  Ground truth value: 0.59375  Predicted value: 0.60301  Frame: 77  **The same subject is available in the validation dataset with ground truth values:** 0.52083, 0.39583 | A person wearing a mask  Description automatically generated with low confidenceA close-up of a person's face  Description automatically generated with medium confidenceA close up of a plant  Description automatically generated with low confidenceA picture containing person, wall, person, wearing  Description automatically generated (A) (B) (C) (D) (E) (F) **A picture containing person, wall, indoor, clothing  Description automatically generated** | Grad-CAM identified eye, eyebrows, cheek, nose, and chin areas while Guided Backpropagation identified the edges in the face area with non-facial features. |
| Video file name: shEsu57CYnA.000 **Validation dataset**  Ground truth value: 0.47916666  Predicted value: 0.57163  Frame: 10  **Same subject is available in the training dataset with ground truth values:** 0.73958, 0.34375,  0.54166, 0.30208, 0.70833 | (A) (B) (C) (D) (E) (F) **A person with long hair  Description automatically generated with low confidence**A picture containing bell jar  Description automatically generatedA close up of a spider  Description automatically generated with low confidenceA picture containing electronic  Description automatically generated | Grad-CAM identified forehead, mouth, and background areas while Guided Backpropagation identified the edges in the face area with background features. |
| Trait score 0.4-0.2Trait score less than 0.2 | Video file name: PyPFJWirPjs.002 Ground truth value: 0.38541666  Predicted value: 0.53336  Frame: 72  **The same subject is available in the training dataset with ground truth values:** 0.13541, 0.46875 | A picture containing wall, person  Description automatically generatedA picture containing hydrozoan  Description automatically generatedA picture containing hydrozoan  Description automatically generated (A) (B) (C) (D) (E) (F) A picture containing person, person, male  Description automatically generatedA picture containing person, wall, indoor, sport  Description automatically generated | Grad-CAM identified eyes and eyebrows while Guided Backpropagation identified the edges in the face area with non-facial features such as dress, hand gestures, and jewelry worn by him. |
| Video file name: d4iSwRMV0bA.001 Ground truth value: 0.42708334  Predicted value: 0.53845  Frame: 18  **The same subject is available in the training dataset with ground truth values:** 0.427083 | A picture containing text  Description automatically generatedA close up of a flower  Description automatically generated with low confidenceA picture containing reptile  Description automatically generatedA picture containing invertebrate  Description automatically generatedA picture containing person  Description automatically generatedA picture containing person, indoor, person, floor  Description automatically generated (A) (B) (C) (D) (E) (F) | Grad-CAM identified forehead, mouth, chin, and background information while Guided Backpropagation identified the edges in the face area with non-facial features such as strips of the dress. |
| Video file name: jFx6AEw6viQ.000 Ground truth value: 0.15625  Predicted value: 0.364714  Frame: 52  **The same subject is available in the training dataset with ground truth values:** 0.3125, 0.21875, 0.19791 | A picture containing person, person, male  Description automatically generatedA close up of a person's eye  Description automatically generated with low confidenceA close up of a spider  Description automatically generated with low confidenceA picture containing microphone  Description automatically generatedA person making a face  Description automatically generated with low confidence (A) (B) (C) (D) (E) (F) A close-up of a toothbrush  Description automatically generated with low confidence | Grad-CAM identified eye, eyebrows, and forehead areas while Guided Backpropagation identified the edges in the face area with background features. |
| Video file name: DefePa0\_6Sg.000 Ground truth value: 0.07291666  Predicted value: 0.34756  Frame: 19  **The same subject is available in the training dataset with ground truth values:** 0.34375, 0.17708, 0.1875 | A close-up of a spider  Description automatically generated with medium confidenceA close-up of a human brain  Description automatically generated with low confidenceA close up of a spider  Description automatically generated with low confidenceA picture containing light  Description automatically generated (A) (B) (C) (D) (E) (F) A person with a beard  Description automatically generated with medium confidence | Grad-CAM identified mouth and nose areas while Guided Backpropagation identified the edges in the face area with non-facial features and minor background features. |

## **Agreeableness**

Table 3: Results of Agreeableness Trait

|  |  |  |  |
| --- | --- | --- | --- |
| Trait score greater than 0.8 | Video file name: BmDClgdWlH4.005 Ground truth value: 0.8681319  Predicted value: 0.723585  Frame: 99  **The same subject is available in the training dataset with ground truth values:** 0.75824, 0.64835, 0.85714 | (A) (B) (C) (D) (E) (F) A picture containing person  Description automatically generatedA picture containing flying, day  Description automatically generatedA picture containing text  Description automatically generatedA close-up of a person's skin  Description automatically generated with low confidenceA picture containing text, wall, person, indoor  Description automatically generated**A person with the mouth open  Description automatically generated with low confidence** | Grad-CAM identified eye and skull areas while Guided Backpropagation identified the edges in the face area with background features. |
| Video file name: PsqpkFKX8co.000 Ground truth value: 0.82417583  Predicted value: 0.66592  Frame: 65  **The same subject is available in the training dataset with ground truth values:** 0.72527, 0.73626 | (A) (B) (C) (D) (E) (F) A picture containing wall, indoor  Description automatically generatedA picture containing kite, flying, people, day  Description automatically generatedA picture containing text, hydrozoan  Description automatically generatedA picture containing invertebrate, hydrozoan  Description automatically generatedA picture containing person, indoor  Description automatically generated**A person with long hair  Description automatically generated with medium confidence** | Grad-CAM identified forehead, eye, eyebrows areas, and background information as important features, while Guided Backpropagation identified the edges in the face area with non-facial features and background data. |
|  | Video file name: R5uXsQsO6Uo.004 Ground truth value: 0.8021978  Predicted value: 0.62039  Frame: 12  **The same subject is available in the training dataset with ground truth values:** 0.857142 | (A) (B) (C) (D) (E) (F) A picture containing person, wall, indoor, posing  Description automatically generatedA picture containing night sky  Description automatically generatedA picture containing glass  Description automatically generatedA close up of a plant  Description automatically generated with low confidenceA picture containing person, indoor  Description automatically generated**A picture containing person, indoor, posing  Description automatically generated** | This one fails to identify the facial features as important features using Grad-CAM technique, while Guided Backpropagation also mainly highlights background features than face features. |
| Trait score 0.8-0.6 | Video file name: W0LRjSS9pVM.005 Ground truth value: 0.791209  Predicted value: 0.65057  Frame: 50  **The same subject is available in the training dataset with ground truth values:** 0.74725, 0.61538 | A picture containing wall, indoor, bathroom  Description automatically generatedA picture containing night sky  Description automatically generatedA vase with flowers  Description automatically generated with low confidenceA picture containing person, light, dark, night  Description automatically generated (A) (B) (C) (D) (E) (F) A person with the mouth open  Description automatically generated with medium confidence | Grad-CAM identified eye, eyebrows areas and a few background information, while Guided Backpropagation identified the edges in the face area with background features. |
| Video file name: gM\_KAA-ejJA.000 Ground truth value: 0.71428573  Predicted value: 0.63812  Frame:84  **The same subject is available in the training dataset with ground truth values:** 0.70329 | A picture containing wall, indoor, bathroom, room  Description automatically generatedA picture containing nature  Description automatically generatedA picture containing bell jar  Description automatically generatedA picture containing invertebrate, arthropod, hydrozoan  Description automatically generatedA person taking a selfie  Description automatically generatedA picture containing person, person, indoor, wall  Description automatically generated (A) (B) (C) (D) (E) (F) | Grad-CAM mainly highlighted jewelry is worn, neck area, and eye with background information, while Guided Backpropagation identified the edges in the face area with non-facial and background features. |
| Trait score 0.6-0.4 | Video file name: 3Sj-GZ3YXWs.003 Ground truth value: 0.5934066  Predicted value: 0.52617  Frame: 1  **Same subject is available in the training dataset with ground truth values:** 0.604395, 0.51648, 0.41758, 0.48351, 0.626373 | A picture containing text  Description automatically generatedA picture containing text  Description automatically generatedA picture containing person, person  Description automatically generated (A) (B) (C) (D) (E) (F) A person with his mouth open  Description automatically generated with medium confidence | Grad-CAM identified forehead and nose areas as main features while Guided Backpropagation mainly identified the edges in the face area. |
| Video file name: RhFPotjd0hM.005 Ground Truth Value: 0.582418  Predicted value: 0.63841  Frame: 46 | A picture containing invertebrate, arthropod  Description automatically generatedA picture containing wall, person  Description automatically generatedA picture containing person  Description automatically generatedA picture containing person, person, wall, male  Description automatically generated (A) (B) (C) (D) (E) (F) A person taking a selfie  Description automatically generated | Grad-CAM identified eye, nose areas, and non-facial information while Guided Backpropagation identified the edges in the face area. |
| Trait score 0.4-0.2 | Video file name: mAjagYWuT7A.005 Ground truth value: 0.3956044  Predicted value: 0.679801  Frame:10  **The same subject is available in the validation dataset with ground truth values:** 0.5934066 | A picture containing wall, indoor, clothing, person  Description automatically generatedA picture containing hydrozoan  Description automatically generatedA person with colorful hair  Description automatically generated with low confidenceA picture containing wall, indoor, person, clothing  Description automatically generated (A) (B) (C) (D) (E) (F) | Grad-CAM identified eye, eyebrows, cheek, and forehead areas while Guided Backpropagation identified the edges in the face area. |
| Video file name: Jcw9NZkMn6I.002 Ground truth value: 0.373626  Predicted value: 0.60094  Frame:77  **The same subject is available in the validation dataset with ground truth values:** 0.4945055  **The same subject is available in the training dataset with ground truth values:** 0.6043956 | (A) (B) (C) (D) (E) (F) A vase with flowers  Description automatically generated with medium confidenceA picture containing flying  Description automatically generatedA picture containing invertebrate  Description automatically generatedA picture containing person, indoor, person  Description automatically generatedA picture containing wall, person, indoor, person  Description automatically generated | Grad-CAM identified forehead area and background information while Guided Backpropagation identified the edges in the face area with background features. |
| Trait score less than 0.2 | Video file name: iz\_eT0DXx3s.001 Ground truth value: 0.17582418  Predicted value: 0.37997  Frame: 92 | A close up of a person's eye  Description automatically generated with medium confidenceA picture containing person, wall  Description automatically generated (A) (B) (C) (D) (E) (F) A picture containing person  Description automatically generatedA child taking a selfie  Description automatically generated | Grad-CAM identified hair, skull, forehead, eyebrows, and eye areas, while Guided Backpropagation identified the edges in the face area. |
| Video file name: o\_kTWEEjtyw.000 Ground truth value: 0.142857  Predicted value: 0.51253  Frame: 7  **The same subject is available in the validation dataset with ground truth values:** 0.15384616  **The same subject is available in the training dataset with ground truth values:** 0.27472, 0.43956, 0.23076 | (A) (B) (C) (D) (E) (F) A person wearing a mask  Description automatically generated with low confidenceA picture containing outdoor object  Description automatically generatedA picture containing invertebrate  Description automatically generatedA picture containing person, curtain, person, indoor  Description automatically generatedA picture containing person, person, indoor, curtain  Description automatically generated | Guided Backpropagation identified the edges in the face area with background features. |

## **Conscientiousness**

Table 4: Results of Conscientiousness Trait

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| --- | --- | --- | --- |
| Trait score greater than 0.8 | Video file name: 4kIHxR6s1L4.000 Ground truth value: 0.8317757  Predicted value: 0.62158  Frame: 80  **The same subject is available in the training dataset with ground truth values:** 0.73831, 0.70093,  0.66355 | A picture containing person  Description automatically generatedA picture containing invertebrate  Description automatically generatedA picture containing invertebrate, arthropod, hydrozoan  Description automatically generatedA picture containing person, toothbrush  Description automatically generated (A) (B) (C) (D) (E) (F) A person with a beard  Description automatically generated with low confidence | Grad-CAM identified forehead, chin, and mouth areas while Guided Backpropagation identified the edges in the face area with non-facial features. |
| Video file name: XQZ5M9oLkXw.000 Ground truth value: 0.8130841  Predicted value: 0.72284  Frame: 100  **The same subject is available in the validation dataset with ground truth values:** 0.81308  **The same subject is available in the training dataset with ground truth values:** 0.61682, 0.64485, 0.654205 | (A) (B) (C) (D) (E) (F) A picture containing person, person, suit  Description automatically generated**A person in a suit  Description automatically generated with medium confidence**A picture containing invertebrate  Description automatically generatedA picture containing invertebrate, arthropod  Description automatically generatedA person with a light on his face  Description automatically generated with low confidence | Grad-CAM identified eye, eyebrows, and nose areas while Guided Backpropagation identified the edges in the face area with non-facial features such as the dress. |
| Trait score 0.8-0.6 | Video file name: 4fN-DKUzgWQ.000 Ground truth value: 0.794393  Predicted value: 0.62815  Frame: 100  **The same subject is available in the validation dataset with ground truth values:** 0.5607477  **The same subject is available in the training dataset with ground truth values:** 0.39252, 0.476635 | A picture containing invertebrate  Description automatically generatedA picture containing wall, person, indoor  Description automatically generatedA close-up of a person's butt  Description automatically generated with low confidenceA close-up of a bug  Description automatically generated with medium confidence (A) (B) (C) (D) (E) (F) A person with a scarf around the neck  Description automatically generated with medium confidence | Grad-CAM identified forehead, eye, and eyebrows areas while Guided Backpropagation identified the edges in the face area with background features. |
| Video file name: m0tNIKbEwHE.005 Ground truth value: 0.6728972  Predicted value: 0.68044  Frame:22  **The same subject is available in the training dataset with ground truth values:** 0.80373, 0.71028 | A picture containing text  Description automatically generatedA close-up of a flower  Description automatically generated with low confidenceA close up of a plant  Description automatically generated with low confidenceA close up of a plant  Description automatically generated with low confidence (A) (B) (C) (D) (E) (F) A person with blonde hair  Description automatically generated with low confidence | Grad-CAM identified eye, eyebrows, cheek, mouth, and chin areas while Guided Backpropagation identified the edges in the face area with background features. |
| Trait score 0.6-0.4 | Video file name: YygvfVxOWP8.004 Ground truth value: 0.55140185  Predicted value: 0.54888  Frame: 65  **The same subject is available in the validation dataset with ground truth values:** 0.71028, 0.58878, 0.551401  **The same subject is available in the training dataset with ground truth values:**  0.49532, 0.411214 | A picture containing wall, indoor  Description automatically generatedA close-up of a person's face  Description automatically generated with low confidenceA close up of a plant  Description automatically generated with low confidenceA picture containing person, indoor  Description automatically generated (A) (B) (C) (D) (E) (F) A person with the mouth open  Description automatically generated with low confidence | Grad-CAM identified forehead, eye, eyebrows, and non-facial features, while Guided Backpropagation identified the edges in the face area with background features. |
| Video file name: r4BGKIXrD9c.002 Ground truth value: 0.46728972  Predicted value: 0.58242  Frame: 5  **The same subject is available in the training dataset with ground truth values:** 0.47663, 0.5233645 | A picture containing text  Description automatically generatedA close-up of a person's face  Description automatically generated with low confidenceA picture containing text  Description automatically generatedGraphical user interface  Description automatically generated with medium confidenceA picture containing text  Description automatically generated (A) (B) (C) (D) (E) (F) A close-up of a bug  Description automatically generated with low confidence | Grad-CAM identified forehead, skull, hair, and eye areas while Guided Backpropagation identified the edges in the face area. |
| Trait score 0.4-0.2 | Video file name: mIQnQ8Nmj-c.003 Ground truth value: 0.39252338  Predicted value: 0.39020  Frame: 1  **The same subject is available in the validation dataset with ground truth values:** 0.48598  **The same subject is available in the training dataset with ground truth values:** 0.23364, 0.34579 | A picture containing plant  Description automatically generatedA picture containing plant  Description automatically generatedA picture containing person  Description automatically generated (A) (B) (C) (D) (E) (F) A picture containing person, wall, person, indoor  Description automatically generated | Grad-CAM identified the forehead area while Guided Backpropagation identified the edges in the face area with non-facial and minor background features. |
| Video file name: ZaihsIQZCx8.000 Ground truth value: 0.35514018  Predicted value: 0.56457  Frame:81  **Same subject is available in the validation dataset with ground truth values:** 0.49532, 0.43925,  0.35514  **The same subject is available in the training dataset with ground truth values:** 0.42056, 0.56074 | A picture containing wall, person, indoor, person  Description automatically generated (A) (B) (C) (D) (E) (F) A vase with flowers  Description automatically generated with low confidenceA vase with red flowers  Description automatically generated with low confidenceA picture containing invertebrate  Description automatically generatedA picture containing indoor, projector  Description automatically generated | Grad-CAM identified forehead and hair areas while Guided Backpropagation mainly identified the non-facial data edges. |
| Trait score less than 0.2 | Video file name: M56UFrEgXnI.000 Ground truth value: 0.18691589  Predicted value: 0.45490  Frame:10  **The same subject is available in the validation dataset with ground truth values:** 0.28971  **The same subject is available in the training dataset with ground truth values:** 0.4205607 | A picture containing clothing, dress  Description automatically generatedA picture containing invertebrate, arthropod  Description automatically generatedA tree with snow on it  Description automatically generated with low confidenceA person taking a selfie  Description automatically generated with medium confidence  (A) (B) (C) (D) (E) (F) | Grad-CAM and Guided backpropagation identified non-facial data as the main features. |

## **Openness**

Table 5: Results of Openness Trait

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| Trait score greater than 0.8 | Video file name: 4kIHxR6s1L4.000 Ground truth value: 0.96666664  Predicted value: 0.63242  Frame: 99  **The same subject is available in the training dataset with ground truth values:** 0.67777, 0.62222, 0.68888 | A person with flowers on their head  Description automatically generated with medium confidenceA close-up of a person's face  Description automatically generated with low confidenceA close up of a plant  Description automatically generated with low confidenceA picture containing person, person  Description automatically generatedA person looking at the camera  Description automatically generated (A) (B) (C) (D) (E) (F) | Grad-CAM identified forehead and few non-facial data while Guided Backpropagation identified the edges in the face area with non-facial and background features. |
| Video file name: TkCDs7NlXyU.002 Ground truth value: 0.8888889  Predicted value: 0.73984  Frame: 83 | (A) (B) (C) (D) (E) (F) A picture containing text  Description automatically generatedA close up of a person's face  Description automatically generated with low confidenceA close up of a plant  Description automatically generated with medium confidenceA close up of a spider  Description automatically generated with medium confidenceA picture containing indoor  Description automatically generatedA person with makeup on the face  Description automatically generated with low confidence | Grad-CAM identified forehead, eye, nose, and mouth areas while Guided Backpropagation identified the edges in the face area with background features. |
| Trait score 0.6-0.4 | Video file name: qYxxTubipSs.004 Ground truth value: 0.5888889  Predicted value: 0.65552  Frame: 16 | A picture containing person  Description automatically generatedA close up of a person's face  Description automatically generated with low confidenceA plant in a vase  Description automatically generated with low confidenceA picture containing invertebrate  Description automatically generatedA picture containing person, window  Description automatically generatedA person with the mouth open  Description automatically generated with medium confidence (A) (B) (C) (D) (E) (F) | Grad-CAM identified the forehead area while Guided Backpropagation mainly identified the edges in the face area with non-facial features and background features. |
| Video file name: 8narByy2B5g.002 Ground truth value: 0.46666667  Predicted value: 0.58682  Frame:2  **The same subject is available in the validation dataset with ground truth values:** 0.57777, 0.48888  **The same subject is available in the training dataset with ground truth values:** 0.52222, 0.72222, 0.44444 | (A) (B) (C) (D) (E) (F) A picture containing wall  Description automatically generatedA picture containing wall, person, indoor, person  Description automatically generatedA picture containing invertebrate  Description automatically generatedA picture containing wall, person, indoor  Description automatically generated | Grad-CAM identified forehead, eye, eyebrows areas, and spectacles, and jewelry worn as important features. Guided Backpropagation identified the edges in the face area with non-facial and background features. |
| Trait score 0.4-0.2 | Video file name: WRz1F6DqmRQ.001 Ground truth value: 0.388889  Predicted value: 0.50659  Frame:22  **The same subject is available in the training dataset with ground truth values:** 0.61111, 0.244444, 0.47777, 0.45555 | A person holding a bottle  Description automatically generated with low confidenceA close-up of a person's face  Description automatically generated with low confidenceA picture containing hydrozoan  Description automatically generatedA picture containing person, wall, standing, posing  Description automatically generatedA picture containing person  Description automatically generated (A) (B) (C) (D) (E) (F) | Grad-CAM identified eye area. Guided Backpropagation identified the edges in the face area with non-facial and background features. |
|  | Video file name: C-48U5oDuvw.000 Ground truth value: 0.34444445  Predicted value: 0.66036  Frame: 83  **The same subject is available in the validation dataset with ground truth values:** 0.58888, 0.62222, 0.56666 | (A) (B) (C) (D) (E) (F) A picture containing wall, person  Description automatically generatedA picture containing hydrozoan  Description automatically generatedA picture containing hydrozoan  Description automatically generatedA close up of a spider  Description automatically generated with medium confidenceA picture containing person, person, dark  Description automatically generatedA picture containing wall, person, person, indoor  Description automatically generated | Grad-CAM identified forehead, eye, eyebrows, mouth, and chin areas while Guided Backpropagation identified the edges in the face area with non-facial features. |
| Trait score less than 0.2 | Video file name: f7togdqxEoo.004 Ground truth value: 0.15555556  Predicted value: 0.38870  Frame:48  **Same subject is available in the validation dataset with ground truth values:** 0.32222, 0.18888, 0.17777, 0.15555  **The same subject is available in the training dataset with ground truth values:** 0.3 | (A) (B) (C) (D) (E) (F) A picture containing wall, indoor  Description automatically generatedA pair of earrings  Description automatically generated with low confidenceA close up of a spider  Description automatically generated with low confidenceA picture containing text, person, indoor  Description automatically generatedA picture containing person  Description automatically generated | Grad-CAM identified forehead, eye, nose, spectacles worn, and background areas. Guided Backpropagation identified the edges in the face area with a cosiderably high amount of background features. |