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This week, we modified the classifiers to use only the top half of the images. This led to outstanding improvement. Below is a table summarizing the accuracy of the predictions methods we have tried so far.

Our 2 classifiers (main and selfie) each have 8 classes, with each class having 16 training images. That's 256 total training images (128 for each classifier). For each class, there are 4 question images from the front camera and 4 questions images from the selfie camera.

Table 1: Accuracy of various prediction methods.

	Day	Night	Day top half	Night top half
Main	0.75	0.53	-	-
Selfie	1	0.78	-	-
Main & Selfie MAX	0.8750	0.7188	1	0.9688
Main & Selfie SUM	0.9688	0.8438	1	1

Here are the confusion matrices for all of the accuracies in the table above:

```
Main, Day =
KNOWN        | NE_MAIN_S   NE_MAIN_W   NW_MAIN_E   NW_MAIN_S   SE_MAIN_N   SE_MAIN_W   SW_MAIN_E   SW_MAIN_N
-------------------------------------------------------------------------------------------------------------
NE_MAIN_S    | 1.00        0.00        0.00        0.00        0.00        0.00        0.00        0.00
NE_MAIN_W    | 0.25        0.25        0.25        0.00        0.00        0.25        0.00        0.00
NW_MAIN_E    | 0.00        0.00        1.00        0.00        0.00        0.00        0.00        0.00
NW_MAIN_S    | 0.00        0.00        0.00        1.00        0.00        0.00        0.00        0.00
SE_MAIN_N    | 0.00        0.00        0.00        0.00        1.00        0.00        0.00        0.00
SE_MAIN_W    | 0.00        0.25        0.25        0.00        0.25        0.25        0.00        0.00
SW_MAIN_E    | 0.00        0.00        0.00        0.00        0.00        0.00        1.00        0.00
SW_MAIN_N    | 0.00        0.00        0.25        0.00        0.00        0.25        0.00        0.50
Average Accuracy is 0.75.

Main, Night =
KNOWN        | NE_MAIN_S   NE_MAIN_W   NW_MAIN_E   NW_MAIN_S   SE_MAIN_N   SE_MAIN_W   SW_MAIN_E   SW_MAIN_N
-------------------------------------------------------------------------------------------------------------
NE_MAIN_S    | 1.00        0.00        0.00        0.00        0.00        0.00        0.00        0.00
NE_MAIN_W    | 0.00        0.00        1.00        0.00        0.00        0.00        0.00        0.00
NW_MAIN_E    | 0.00        0.00        1.00        0.00        0.00        0.00        0.00        0.00
NW_MAIN_S    | 0.25        0.00        0.00        0.75        0.00        0.00        0.00        0.00
SE_MAIN_N    | 0.00        0.00        1.00        0.00        0.00        0.00        0.00        0.00
SE_MAIN_W    | 0.00        0.25        0.00        0.00        0.00        0.50        0.25        0.00
SW_MAIN_E    | 0.00        0.00        0.00        0.00        0.00        0.00        1.00        0.00
SW_MAIN_N    | 0.25        0.00        0.00        0.00        0.00        0.00        0.75        0.00
Average Accuracy is 0.53.

Selfie, Day =
KNOWN        | NE_SELF_S   NE_SELF_W   NW_SELF_E   NW_SELF_S   SE_SELF_N   SE_SELF_W   SW_SELF_E   SW_SELF_N
-------------------------------------------------------------------------------------------------------------
NE_SELF_S    | 1.00        0.00        0.00        0.00        0.00        0.00        0.00        0.00
NE_SELF_W    | 0.00        1.00        0.00        0.00        0.00        0.00        0.00        0.00
NW_SELF_E    | 0.00        0.00        1.00        0.00        0.00        0.00        0.00        0.00
NW_SELF_S    | 0.00        0.00        0.00        1.00        0.00        0.00        0.00        0.00
SE_SELF_N    | 0.00        0.00        0.00        0.00        1.00        0.00        0.00        0.00
SE_SELF_W    | 0.00        0.00        0.00        0.00        0.00        1.00        0.00        0.00
SW_SELF_E    | 0.00        0.00        0.00        0.00        0.00        0.00        1.00        0.00
SW_SELF_N    | 0.00        0.00        0.00        0.00        0.00        0.00        0.00        1.00
Average Accuracy is 1.00.
```

Selfie, Night =

KNOWN	NE_SELF_S	NE_SELF_W	NW_SELF_E	NW_SELF_S	SE_SELF_N	SE_SELF_W	SW_SELF_E	SW_SELF_N
NE_SELF_S	0.25	0.00	0.00	0.00	0.00	0.00	0.75	0.00
NE_SELF_W	0.00	0.00	0.00	0.25	0.00	0.25	0.50	0.00
NW_SELF_E	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
NW_SELF_S	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
SE_SELF_N	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
SE_SELF_W	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
SW_SELF_E	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
SW_SELF_N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00

Average Accuracy is 0.78.

Main & Selfie SUM, Day =

```
1.0000        0        0        0        0        0        0        0
     0   1.0000        0        0        0        0        0        0
     0        0   1.0000        0        0        0        0        0
     0        0        0   1.0000        0        0        0        0
     0        0        0        0   1.0000        0        0        0
     0        0        0        0   0.2500   0.7500        0        0
     0        0        0        0        0        0   1.0000        0
     0        0        0        0        0        0        0   1.0000
```
sumPercent =
    0.9688

Main & Selfie MAX, Day =

```
1.0000        0        0        0        0        0        0        0
0.2500   0.5000        0        0        0   0.2500        0        0
     0        0   1.0000        0        0        0        0        0
     0        0        0   1.0000        0        0        0        0
     0        0        0        0   1.0000        0        0        0
     0        0   0.2500        0   0.2500   0.5000        0        0
     0        0        0        0        0        0   1.0000        0
     0        0        0        0        0        0        0   1.0000
```
maxPercent =
    0.8750

Main & Selfie SUM, Night =

```
1.0000        0        0        0        0        0        0        0
     0        0        0   0.2500        0        0   0.7500        0
     0        0   1.0000        0        0        0        0        0
0.2500        0        0   0.7500        0        0        0        0
     0        0        0        0   1.0000        0        0        0
     0        0        0        0        0   1.0000        0        0
     0        0        0        0        0        0   1.0000        0
     0        0        0        0        0        0        0   1.0000
```
sumPercent =
    0.8438

Main & Selfie MAX, Night =

```
1.0000        0        0        0        0        0        0        0
     0        0   0.7500        0        0        0   0.2500        0
     0        0   1.0000        0        0        0        0        0
0.2500        0        0   0.7500        0        0        0        0
     0        0   0.5000        0   0.5000        0        0        0
     0        0        0        0        0   1.0000        0        0
     0        0        0        0        0        0   1.0000        0
     0        0        0        0        0        0   0.5000   0.5000
```
maxPercent =
    0.7188

Main & Selfie SUM, Day, Top Half =

```
1   0   0   0   0   0   0   0
0   1   0   0   0   0   0   0
0   0   1   0   0   0   0   0
0   0   0   1   0   0   0   0
0   0   0   0   1   0   0   0
0   0   0   0   0   1   0   0
0   0   0   0   0   0   1   0
0   0   0   0   0   0   0   1
```
sumPercent =
    1

Main & Selfie MAX, Day, Top Half =

```
     1     0     0     0     0     0     0     0
     0     1     0     0     0     0     0     0
     0     0     1     0     0     0     0     0
     0     0     0     1     0     0     0     0
     0     0     0     0     1     0     0     0
     0     0     0     0     0     1     0     0
     0     0     0     0     0     0     1     0
     0     0     0     0     0     0     0     1
```

maxPercent =

```
     1
```

Main & Selfie SUM, Night, Top Half =

```
     1     0     0     0     0     0     0     0
     0     1     0     0     0     0     0     0
     0     0     1     0     0     0     0     0
     0     0     0     1     0     0     0     0
     0     0     0     0     1     0     0     0
     0     0     0     0     0     1     0     0
     0     0     0     0     0     0     1     0
     0     0     0     0     0     0     0     1
```

sumPercent =

```
     1
```

Main & Selfie MAX, Night, Top Half =

```
   1.0000        0        0        0        0        0        0        0
        0   1.0000        0        0        0        0        0        0
        0        0   1.0000        0        0        0        0        0
        0        0        0   0.7500        0        0        0   0.2500
        0        0        0        0   1.0000        0        0        0
        0        0        0        0        0   1.0000        0        0
        0        0        0        0        0        0   1.0000        0
        0        0        0        0        0        0        0   1.0000
```

maxPercent =

```
   0.9688
```