```
C:\Users\User\anaconda3\envs\AI_hw1\python.exe "C:\
Program Files\JetBrains\PyCharm 2021.3.2\plugins\python
\helpers\pydev\pydevconsole.py" --mode=client --port=
2215

import sys; print('Python %s on %s' % (sys.version, sys
.platform))
sys.path.extend(['I:\\Code\\AI\\AI_HW1', 'I:/Code/AI/
AI_HW1'])

PyDev console: starting.

Python 3.8.0 (default, Nov  6 2019, 16:00:02) [MSC v.
1916 64 bit (AMD64)] on win32
>>> runfile('I:/Code/AI/AI_HW1/main.py', wdir='I:/Code/
AI/AI_HW1')
Loading images
The number of training samples loaded: 200
The number of test samples loaded: 200
Show the first and last images of training dataset
Computing integral images
Building features
Applying features to dataset
Selecting best features
Selected 5171 potential features
Initialize weights
Run No. of Iteration: 1
Chose classifier: Weak Clf (threshold=0, polarity=1,
Haar feature (positive regions=[RectangleRegion(8, 0, 1
, 3), RectangleRegion(7, 3, 1, 3)], negative regions=[
RectangleRegion(7, 0, 1, 3), RectangleRegion(8, 3, 1, 3
)]) with accuracy: 162.000000 and alpha: 1.450010

Evaluate your classifier with training dataset
False Positive Rate: 28/100 (0.280000)
False Negative Rate: 10/100 (0.100000)
Accuracy: 162/200 (0.810000)

Evaluate your classifier with test dataset
False Positive Rate: 49/100 (0.490000)
False Negative Rate: 55/100 (0.550000)
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Accuracy: 96/200 (0.480000)
Run No. of Iteration: 2
Chose classifier: Weak Clf (threshold=0, polarity=1,
Haar feature (positive regions=[RectangleRegion(4, 8, 2
, 9)], negative regions=[RectangleRegion(2, 8, 2, 9)])
with accuracy: 156.000000 and alpha: 1.286922

Evaluate your classifier with training dataset
False Positive Rate: 28/100 (0.280000)
False Negative Rate: 10/100 (0.100000)
Accuracy: 162/200 (0.810000)

Evaluate your classifier with test dataset
False Positive Rate: 49/100 (0.490000)
False Negative Rate: 55/100 (0.550000)
Accuracy: 96/200 (0.480000)
Run No. of Iteration: 3
Chose classifier: Weak Clf (threshold=0, polarity=1,
Haar feature (positive regions=[RectangleRegion(16, 16
, 1, 2)], negative regions=[RectangleRegion(15, 16, 1,
2)]) with accuracy: 155.000000 and alpha: 1.011738

Evaluate your classifier with training dataset
False Positive Rate: 23/100 (0.230000)
False Negative Rate: 1/100 (0.010000)
Accuracy: 176/200 (0.880000)

Evaluate your classifier with test dataset
False Positive Rate: 48/100 (0.480000)
False Negative Rate: 46/100 (0.460000)
Accuracy: 106/200 (0.530000)
Run No. of Iteration: 4
Chose classifier: Weak Clf (threshold=0, polarity=1,
Haar feature (positive regions=[RectangleRegion(4, 14,
8, 2)], negative regions=[RectangleRegion(4, 16, 8, 2
)]) with accuracy: 153.000000 and alpha: 0.908680

Evaluate your classifier with training dataset
False Positive Rate: 26/100 (0.260000)
False Negative Rate: 2/100 (0.020000)
Accuracy: 172/200 (0.860000)
```

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Evaluate your classifier with test dataset
False Positive Rate: 49/100 (0.490000)
False Negative Rate: 56/100 (0.560000)
Accuracy: 95/200 (0.475000)
Run No. of Iteration: 5
Chose classifier: Weak Clf (threshold=0, polarity=1,
Haar feature (positive regions=[RectangleRegion(10, 8,
1, 1)], negative regions=[RectangleRegion(9, 8, 1, 1
)]) with accuracy: 155.000000 and alpha: 0.924202

Evaluate your classifier with training dataset
False Positive Rate: 23/100 (0.230000)
False Negative Rate: 0/100 (0.000000)
Accuracy: 177/200 (0.885000)

Evaluate your classifier with test dataset
False Positive Rate: 49/100 (0.490000)
False Negative Rate: 43/100 (0.430000)
Accuracy: 108/200 (0.540000)
Run No. of Iteration: 6
Chose classifier: Weak Clf (threshold=0, polarity=1,
Haar feature (positive regions=[RectangleRegion(7, 3, 3
, 8)], negative regions=[RectangleRegion(4, 3, 3, 8)])
with accuracy: 78.000000 and alpha: 0.769604

Evaluate your classifier with training dataset
False Positive Rate: 22/100 (0.220000)
False Negative Rate: 0/100 (0.000000)
Accuracy: 178/200 (0.890000)

Evaluate your classifier with test dataset
False Positive Rate: 50/100 (0.500000)
False Negative Rate: 48/100 (0.480000)
Accuracy: 102/200 (0.510000)
Run No. of Iteration: 7
Chose classifier: Weak Clf (threshold=0, polarity=1,
Haar feature (positive regions=[RectangleRegion(5, 2,
10, 2)], negative regions=[RectangleRegion(5, 4, 10, 2
)]) with accuracy: 145.000000 and alpha: 0.719869
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```
Evaluate your classifier with training dataset
False Positive Rate: 20/100 (0.200000)
False Negative Rate: 0/100 (0.000000)
Accuracy: 180/200 (0.900000)

Evaluate your classifier with test dataset
False Positive Rate: 52/100 (0.520000)
False Negative Rate: 39/100 (0.390000)
Accuracy: 109/200 (0.545000)
Run No. of Iteration: 8
Chose classifier: Weak Clf (threshold=0, polarity=1,
Haar feature (positive regions=[RectangleRegion(12, 11
, 5, 1)], negative regions=[RectangleRegion(12, 12, 5,
1)]) with accuracy: 72.000000 and alpha: 0.685227

Evaluate your classifier with training dataset
False Positive Rate: 18/100 (0.180000)
False Negative Rate: 0/100 (0.000000)
Accuracy: 182/200 (0.910000)

Evaluate your classifier with test dataset
False Positive Rate: 47/100 (0.470000)
False Negative Rate: 43/100 (0.430000)
Accuracy: 110/200 (0.550000)
Run No. of Iteration: 9
Chose classifier: Weak Clf (threshold=0, polarity=1,
Haar feature (positive regions=[RectangleRegion(10, 4,
1, 1)], negative regions=[RectangleRegion(9, 4, 1, 1
)]) with accuracy: 152.000000 and alpha: 0.707795

Evaluate your classifier with training dataset
False Positive Rate: 20/100 (0.200000)
False Negative Rate: 0/100 (0.000000)
Accuracy: 180/200 (0.900000)

Evaluate your classifier with test dataset
False Positive Rate: 48/100 (0.480000)
False Negative Rate: 37/100 (0.370000)
Accuracy: 115/200 (0.575000)
Run No. of Iteration: 10
Chose classifier: Weak Clf (threshold=0, polarity=1,
```

```
Haar feature (positive regions=[RectangleRegion(4, 9, 2
, 2), RectangleRegion(2, 11, 2, 2)], negative regions=[
RectangleRegion(2, 9, 2, 2), RectangleRegion(4, 11, 2,
2)]) with accuracy: 137.000000 and alpha: 0.811201

Evaluate your classifier with training dataset
False Positive Rate: 17/100 (0.170000)
False Negative Rate: 0/100 (0.000000)
Accuracy: 183/200 (0.915000)

Evaluate your classifier with test dataset
False Positive Rate: 45/100 (0.450000)
False Negative Rate: 36/100 (0.360000)
Accuracy: 119/200 (0.595000)

Detect faces at the assigned location using your
classifier
```