

**Digital Image Processing Design (ISE4131-001)**  
**Project #1: Face Detection using Viola Jones (VJ) Algorithm**  
**Project Report**

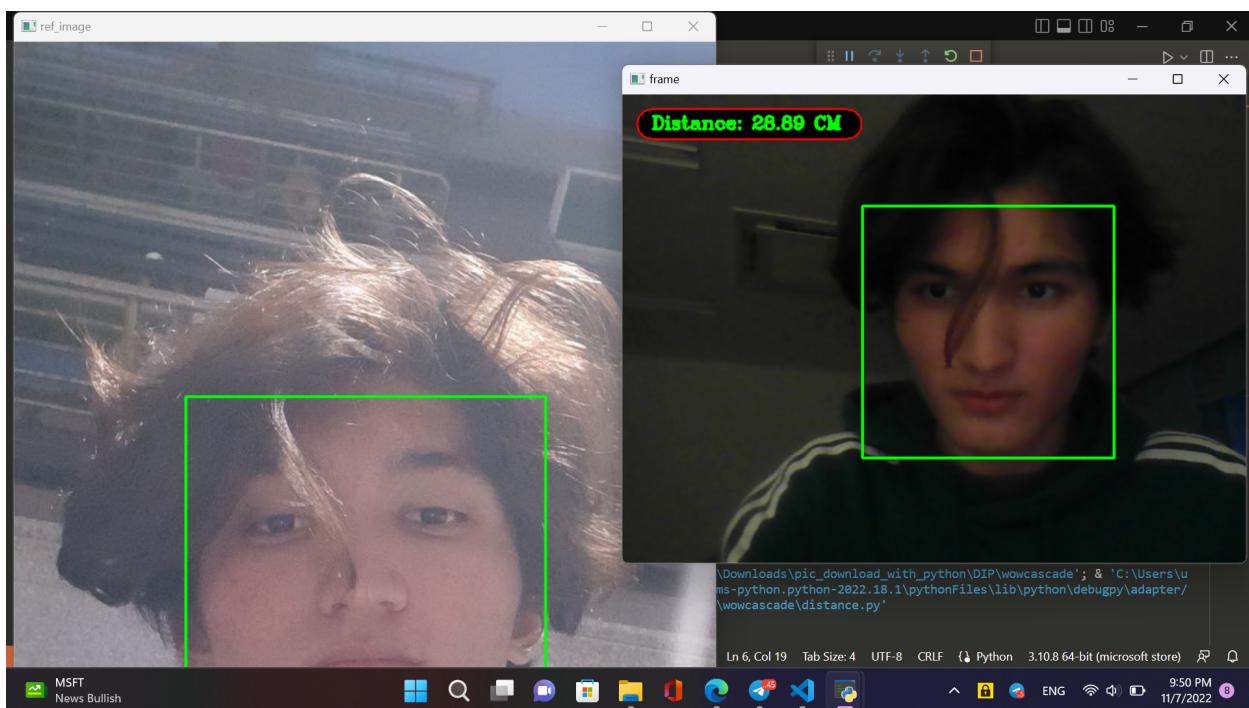
**Team Name:** Synergy

**Team Members:**

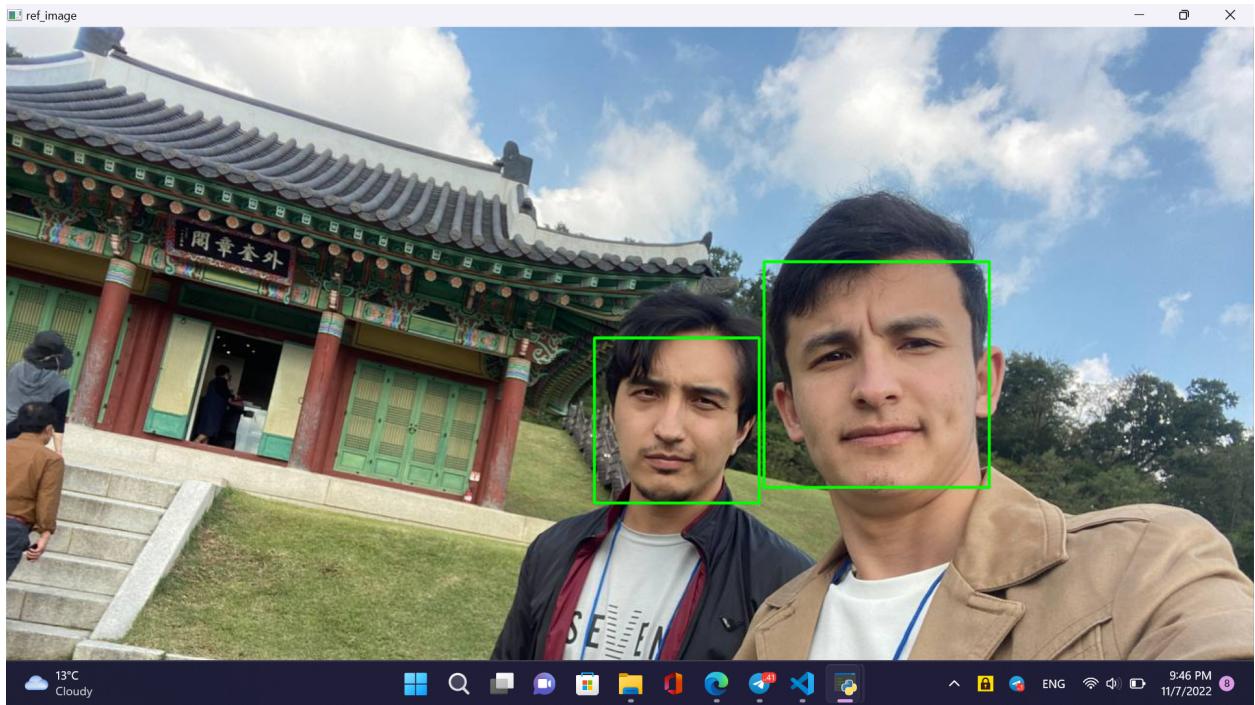
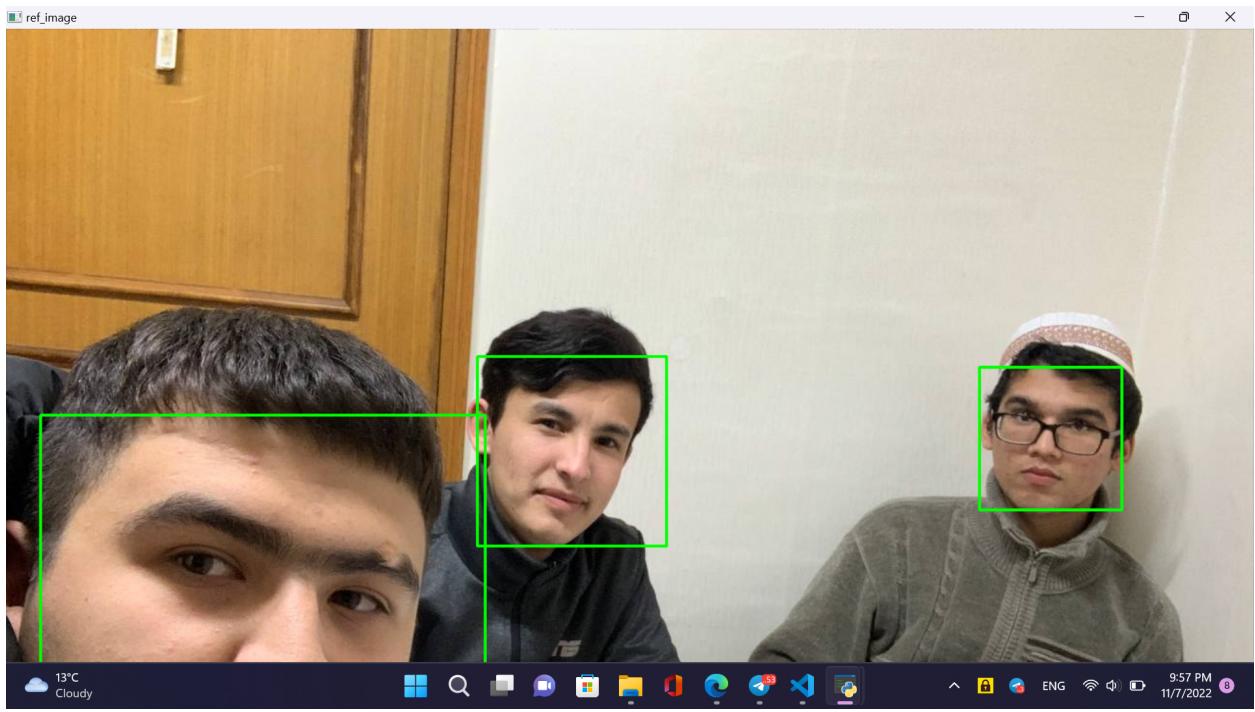
1. Temurbek Abdurakhmonov 12200338 (Team Leader)
2. Khumoyun Rakhmonberdiev 12194949
3. Atkham Eshonklov 12200317
4. Vakhitov Akbarali 12200312

**Contributions:**

**Temurbek Abdurakhmonov(12200338d):** was responsible for training the cascade classifier.  
Contributed on writing scripts and testing them with immediate errors.



This current video capture measures distance from face till camera.



**Khumoyun (12194949)** worked on analyzing fallbacks in the project. Assisted on getting datasets and refactoring. Studied material related to the problem is uploaded in [Trello](#). Through the analytics graph plugin, the content access made by each member of the team is checked.

**Vakhitov Akbarali(12200312):** was involved in training the classifier on Linux. Also, was busy with working on py scripts

```

MaxWeakCount: 100
mode: BASIC

===== TRAINING 0-stage =====
<BEGIN
POS count : consumed 4291 : 4291
NEG count : acceptanceRatio 22189 : 1
Precalculation time: 5
+---+-----+---+
| N | HR | FA |
+---+-----+---+
| 1| 1| 1|
+---+-----+---+
| 2| 1| 1|
+---+-----+---+
| 3| 1| 1|
+---+-----+---+
| 4| 1| 1|
+---+-----+---+
| 5| 1| 1|
+---+-----+---+
| 6| 1| 1|
+---+-----+---+
| 7| 0.995339| 0.740187|
+---+-----+---+
| 8| 0.997437| 0.777697|
+---+-----+---+
| 9| 0.995106| 0.668439|
+---+-----+---+
| 10| 0.995106| 0.573482|
+---+-----+---+
| 11| 0.995339| 0.521204|
+---+-----+---+
| 12| 0.995106| 0.501104|
+---+-----+---+
| 13| 0.995805| 0.490198|
+---+-----+
END>
Training until now has taken 0 days 1 hours 58 minutes 52 seconds.

===== TRAINING 1-stage =====
<BEGIN
POS current samplesOpenCV Error: Bad argument (Can not get new positive sample. The most possible reason is insufficient count of samples in given vec-file.
) in get, file /home/travis/miniconda/conda-bld/conda_1486587069159/work/opencv-3.1.0/apps/traincascade/imagedstorage.cpp, line 157
Training Completed Successfully
[]
```

```

[-h <sample_height = 24>]
Environment ready!
Positive Dir selected: /home/ali/HAAR-Cascade-Trainer-Linux/tests/test_1/p
Negative Dir selected: /home/ali/HAAR-Cascade-Trainer-Linux/tests/test_1/n
Output Dir selected: /home/ali/HAAR-Cascade-Trainer-Linux/tests/test_1-
Successfully generated negative images index
Successfully generated positive images index
Info file name: positive.lst
Img file name: (NULL)
Vec file name: /home/all/HAAR-Cascade-Trainer-Linux/tests/test_1/positive.vec
BG file name: (NULL)
Num: 11414
BG color: 0
BG threshold: 80
Invert: FALSE
Max intensity deviation: 40
Max x angle: 1.1
Max y angle: 1.1
Max z angle: 0.5
Show samples: FALSE
Width: 24
Height: 24
Create training samples from images collection...
positive.lst(4292) : parse errorDone. Created 4291 samples
PARAMETERS:
cascadeDirName: /home/ali/HAAR-Cascade-Trainer-Linux/tests/test_1/classifier
vecFileName: /home/all/HAAR-Cascade-Trainer-Linux/tests/test_1/positive.vec
bgFileName: /home/all/HAAR-Cascade-Trainer-Linux/tests/test_1/n/index.txt
numPos: 11414
numNeg: 47986
numStages: 10
precalcValBufSize[Mb] : 1024
precalcIdxBufSize[Mb] : 1024
acceptanceRatioBreakValue : -1
stageType: BOOST
featureType: HAAR
sampleWidth: 24
sampleHeight: 24
boostType: GAB
minHitRate: 0.995
maxFalseAlarmRate: 0.5
weightTrimRate: 0.95
maxDepth: 1
maxWeakCount: 100
mode: BASIC

===== TRAINING 0-stage =====
<BEGIN
POS current samplesOpenCV Error: Bad argument (Can not get new positive sample. The most possible reason is insufficient count of samples in given vec-file.
) in get, file /home/travis/miniconda/conda-bld/conda_1486587069159/work/opencv-3.1.0/apps/traincascade/imagedstorage.cpp, line 157
Training Completed Successfully
```

**Atkham Eshonkulov(12200317):** Was busy with deeply researching existing projects and tried to take reference from them. It was a huge support for other team members. Continuously researched on main problems like detecting average time spent per image and min->max detectable image sizes.

**Challenges:**

- The biggest challenge of our project was the problem solving part. We did research very deeply trying to find solutions( a couple of code lines supposedly) but only ended up finding a way to display a distance that would approximately indicate how far is a person on the screen. Unfortunately, we failed at solving the remaining part of our task which were detecting min and max size of faces possible by the classifier.

**Performance:** The classifier is performing well as intended.