Digital Image Processing Project – Phase 2

Hand Sign Game

Semester Team 11

Team Members:		
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Project Overview:

- The player must make special hand signs quickly.
- The game will use the webcam to read the user's movements.
- The screen will be split into X areas.
- The player will be given a chain of hand signs to make as well as where to place their hand (in only one area of the screen).
- The player should do the earliest sign of the chain; any sign except the earliest will not count.
- The Player's score will be stored. Every correct hand sign adds points and the sign will disappear.
- There is no Time Limit or End of the chain, the speed of signs (the chain) will increase by increasing of the player's points.
- The Game will end if the player missed Y signs.
- The final total points for any game = X*points/Y, player can choose X and Y.

Used Algorithms:

- Running averages to eliminate background.
- Thresholding to differentiate between hand and background.
- Convex Hull to map the hand in the resulting image.

Strength:

- Counting multiple fingers is fast and accurate

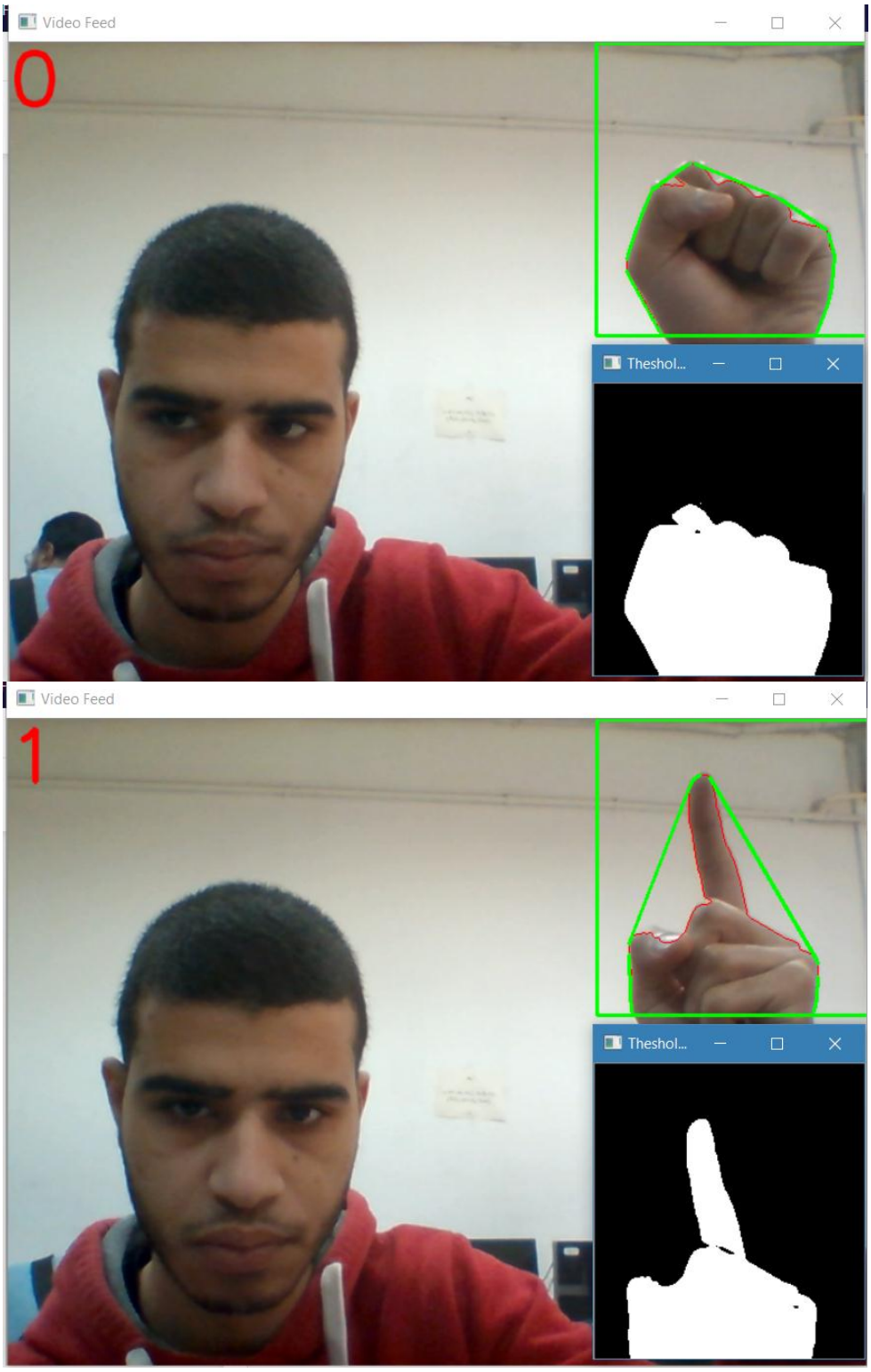
Weaknesses:

- Sometimes one finger doesn't get counted.
- Sometimes in edge cases when user's face is in the target part of the image, the count is inaccurate.

Work Division:

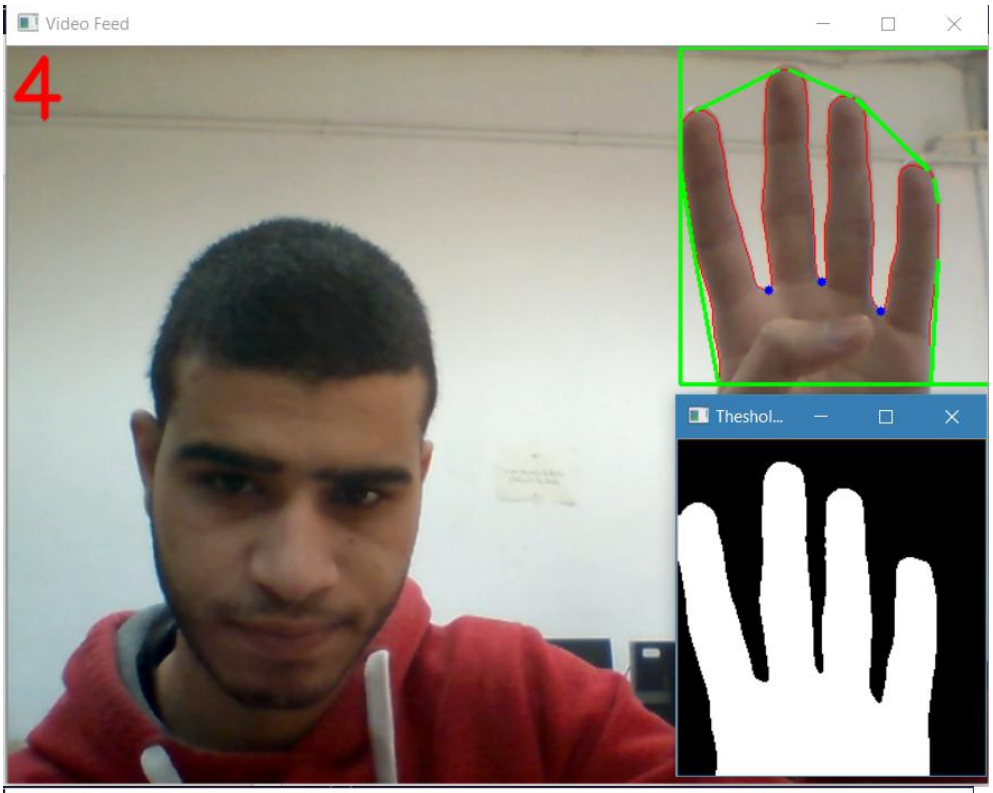
- Omar: Hand detection and finger counting.
- Walid: Pre-processing of the webcam feed and GUI.
- Yahia: Image Segmentation. GUI and game features

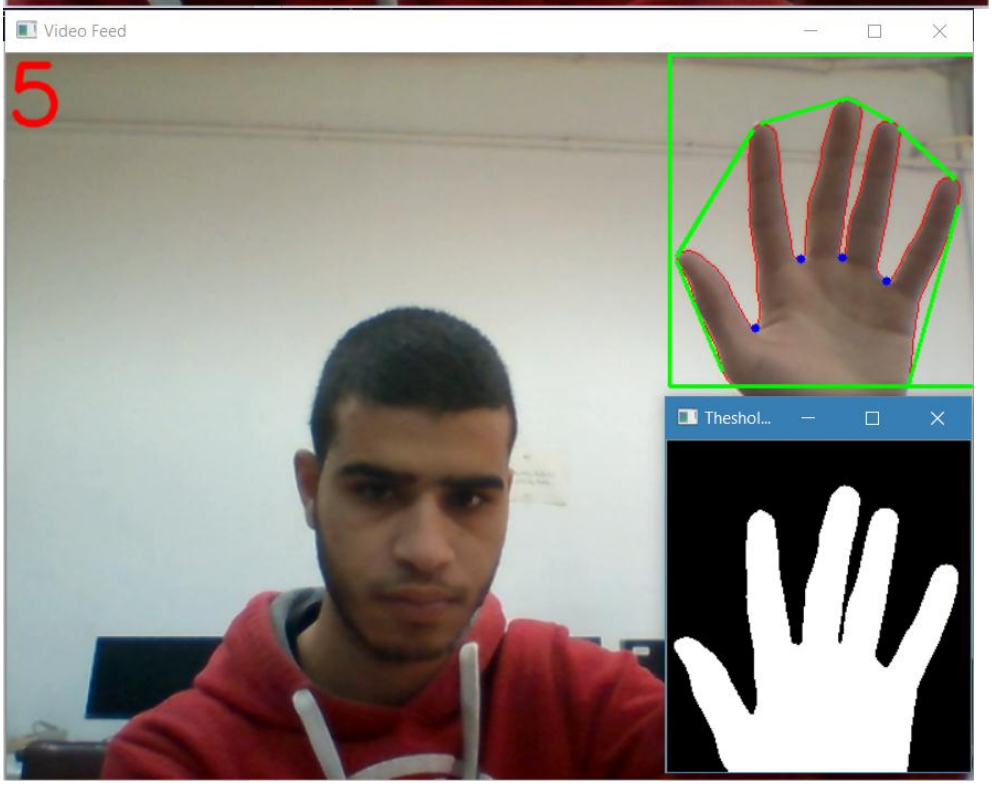
Test Cases:




Video Feed
2
Theshol...


Video Feed
3
Theshol...


Video Feed
4
Theshol...


Video Feed
5
Theshol...