

Press SPACEBAR to capture image
Press 2 for grayscale effect to face
Press 3 for blur effect to face
Press 4 for YCbCr effect to face
Press 5 for pixelation to face
Press 1 to remove any effect to face
Press 6 for extension

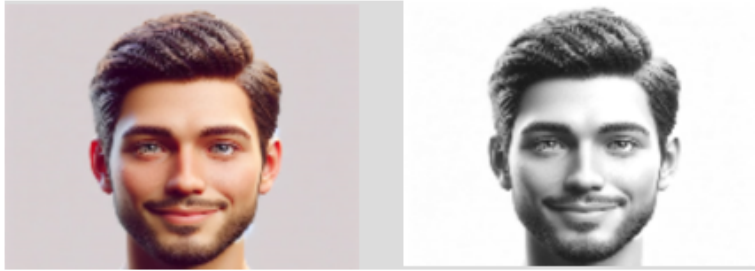
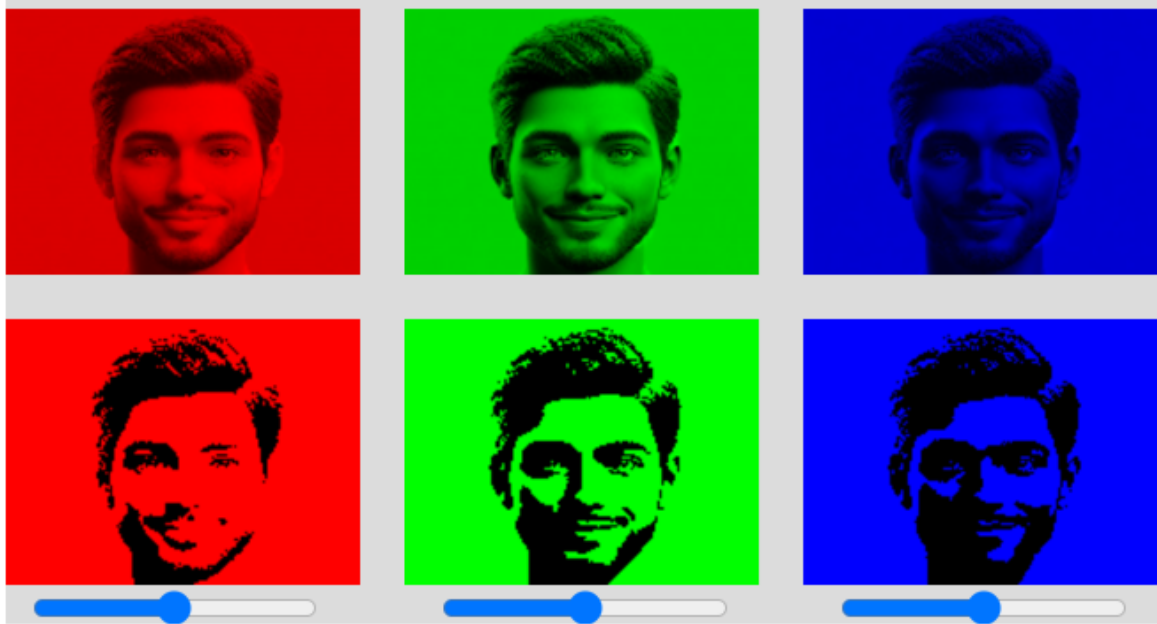


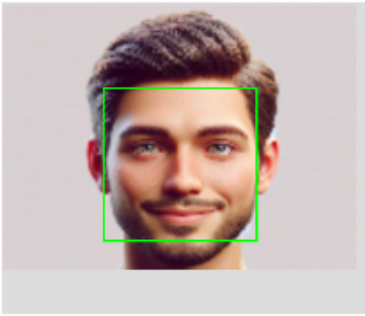
Image is captured when spacebar is pressed and in the second grid you can see the image is converted to gray scale and its brightness is increased by 20% notice how the brightness increases but pixel values are capped at 255.



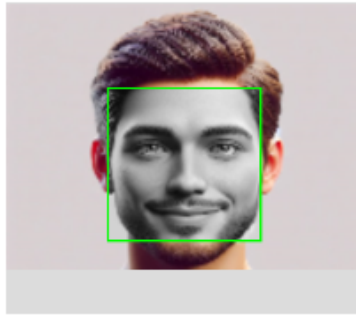
The image is split into three color channels: red, green, and blue. Using sliders, users can threshold each color channel individually, and as they adjust the sliders, the image is updated in real time. The thresholding behavior differs for each channel: the red channel tends to focus more on the warmer regions, while the blue channel focuses more on the cooler regions.



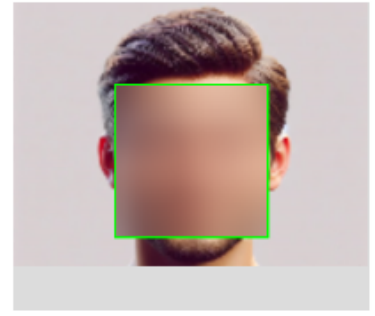
Images are also converted to YUV and HSI color spaces. With these color spaces, Users can threshold the images using a slider as well. Compared to RGB thresholding, these color space thresholding methods produce less noisy results.



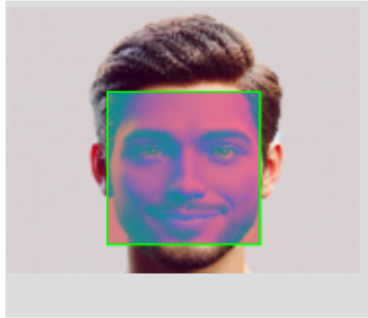
**Default Effect; None, or
When key 1 is pressed to
remove any of 4 effects**



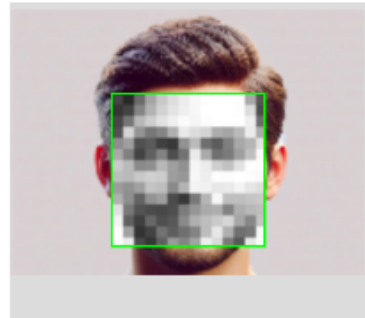
**Grayscale Effect; When
key 2 is pressed**



**Blur Effect; When key 3
is pressed**



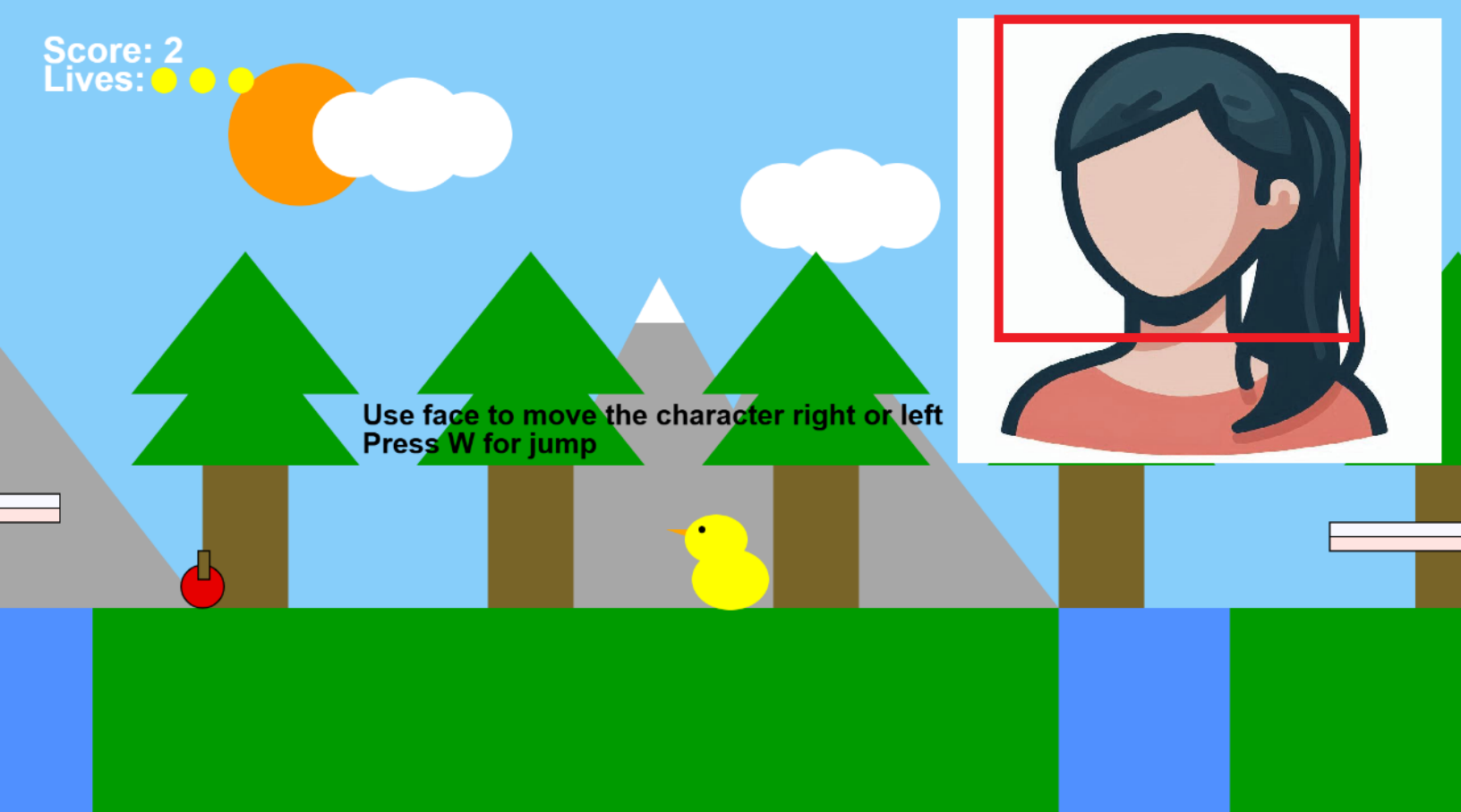
**YCbCr Effect; When key 4
is pressed**



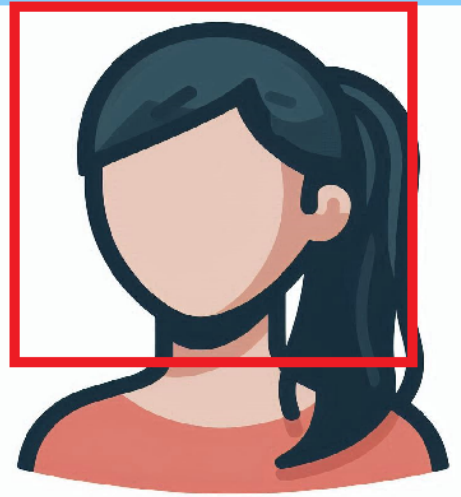
**Pixelation Effect; When
key 5 is pressed**

Additionally, a face detection system has been developed, where pressing keys 1 to 5 allows users to apply different effects. Pressing key 2 applies a grayscale effect, key 3 applies a blur effect, key 4 applies the same color space, key 5 applies pixelation, and key 1 removes all effects.

Score: 2
Lives: ● ● ●



Use face to move the character right or left
Press W for jump



Moving on to the extension, pressing key 6 switches to a game. In this game, the character moves left when the user moves their face to the left and right when the user moves their face to the right. Users can either move their face horizontally or tilt their face to the left or right to control the character. The game is a bit slow but still playable, and the objective is to reach the flagpole. However, you must ensure that your face stays within the designated rectangle, or the game will not proceed properly.

Resources used:

Both images of man and woman used are AI generated by Microsoft Copilot