Emotion Detection AI

Team: Ashley Gans (ME), Austin Modoff (EE), Timothy Kyle Melliza (EE), Sam Yassien (CS), Conor Peters (CS)

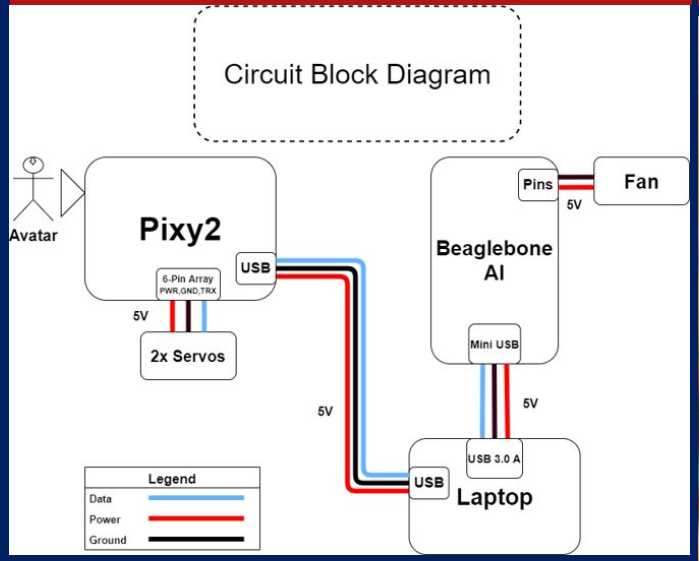
Purpose

Our focus is to provide "real-time" emotion detection by utilizing an external camera paired with a trained neural network. Even though society is practicing physical distancing, emotions do not need to follow suit.

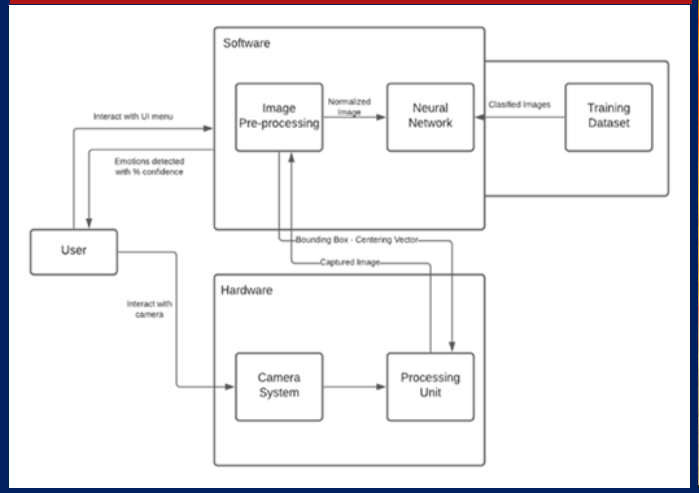
Requirements

1. The neural network shall be capable of identifying at least 3 unique emotions with an accuracy score of at least 70%
2. The system shall perform face tracking and return the image with a box placed around the face of the target
3. The system should be able to work on live camera feedback
4. The camera should be able to track movements.
5. Hardware should be enclosed for safety.

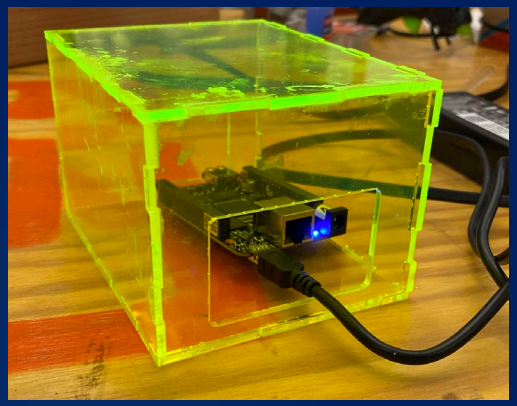
Hardware



Software



Device



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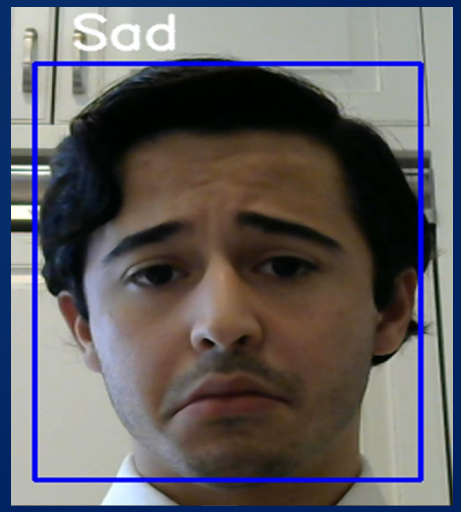
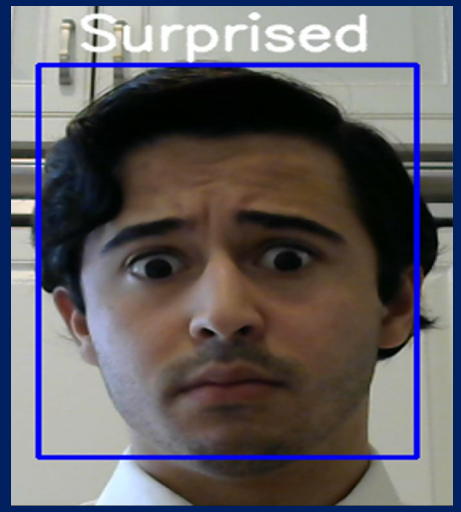
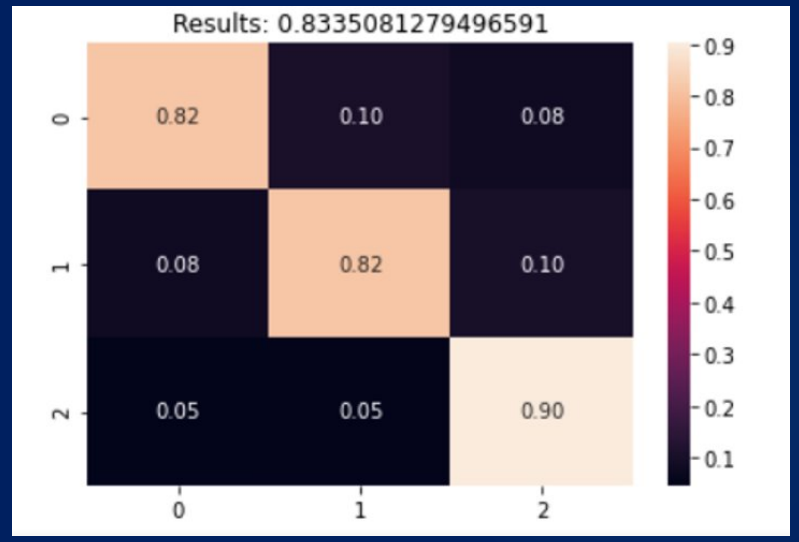
Results

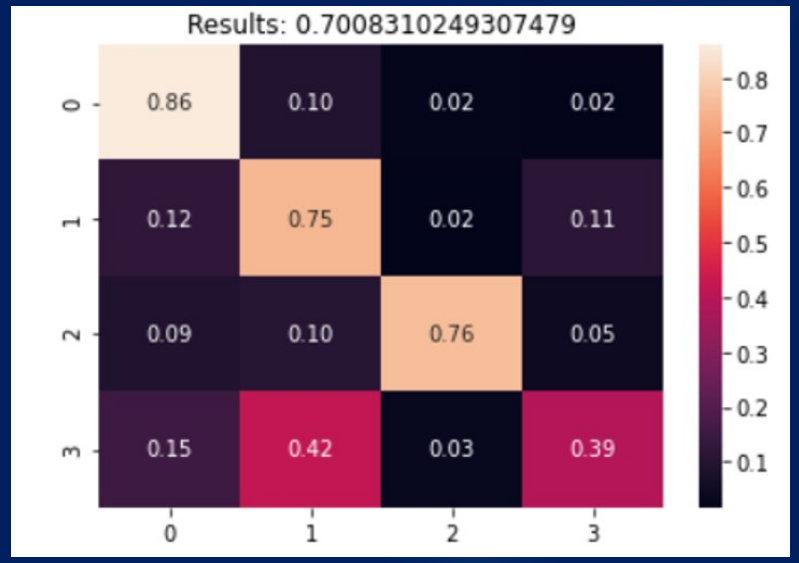
Our solution is capable of achieving 83% accuracy on identifying 3 emotions of happy, sad, and surprised. 75% accuracy on identifying 4 emotions of happy, sad, neutral, and surprised. The two most difficult emotions to differentiate between are sad and neutral.







Confusion matrix
0 = Happy
1 = Sad
2 = Surprised



Confusion matrix
0 = Happy
1 = Sad
2 = Surprised
3 = Neutral