

8 Glossary

- Artificial neural network
 - A form of machine learning modeled after the neurons in the human brain. Artificial neurons and synapses are trained to take an input, process data, and provide an output based on the given input.
- Basic emotions
 - There are six basic emotions classified by FACS which are anger, disgust, fear, happiness, sadness, and surprise.
- Benchmark
 - A benchmark is a metric used to determine the performance of a system. For this project, a benchmark would be the number of mood-detections that occur in a second.
- Bounding box
 - A bounding box is a geometric shape that is placed around an object to help differentiate it among other objects in an image.
- C++
 - C++ is an object-oriented programming language that is used in IGT gaming machines. As such, the team will be using the language to implement the mood-detection program.
- Computer vision
 - Computer vision is a field of computer science that focuses on analyzing, processing, understanding information coming from an image or video.

- Detections per second
 - Detections per second is a metric that will be used to determine how many times a second the mood-detection program is able to read the mood of an individual.
- Eigenface
 - A facial recognition methods that relies on principal component analysis (PCA). This methods looks for linear combinations in an image to summarize a set of data and to try and prevent loss.
- Face database
 - A face database is a collection of photos that contain one or many individuals' faces under various condition. Typically, these databases are used for research purposes, such as facial recognition. An example of a database would be a collection of photos displaying various individuals in different lighting showing different emotions.
- FACS
 - Facial Action Coding System is a system to categorize human facial movements. The system can be used to determine a person's current emotion based on various facial features.
- Feature detection
 - The process of identifying important objects or landmarks in an image. In the case of this project, facial features such as the nose, eyes, eyebrows, nose, mouth, and jawline will be the features the program will identify.

- Fisherface
 - A facial recognition method that relies on linear discriminant analysis (LDA). This method reduces the number of dimensions in an image to help identify variance among images.
- Gaming industry
 - Not to be confused with video games. The gaming industry is involved in regulated, lawful wagering of money on games such as poker or slot machines.
- Human-computer interaction
 - Human-computer interaction is a field of study in computer science that researches how computers react to human input and how well the computer can process that data.
- LDA
 - Linear discriminant analysis is a method used in mathematics and machine learning to find a linear combination that captures the features of an object.
- Lighting
 - Lighting is the amount of light and its intensity in an environment. Lighting is a constant problem in computer vision and will be an obstacle when attempting to read a person's mood.
- Mood
 - Mood is a temporary state of mind or feeling that occurs due to some form of stimulus.

- Mood detection
 - The process of reading image data of an individual's facial features and determining their mood.
- Machine learning
 - Machine learning is the process of teaching a computer system how to recognize patterns from a set of data. The system should be able to recognize patterns independently without guidance from a human.
- PCA
 - Principal component analysis is a statistical method that takes a set of values that may be related and converts them to a set of linearly uncorrelated variables.

9 Bibliography

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