CAPSTONE 2

Avoid a fight in venues with nonLutte app

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Scenario

The situation repeats itself too many times and it exceeds individual motives and focus on group attention: fights. Generally, one of the reasons a fight occurs is by the simple fact of how many people are in a venue. Big crowds of 1,000 people have all that is necessary for a fight to break out. Due to sociologically reasons, only one fight may happen in such crowds. More than 1,000 people per venue, more fights are likely to occur. Venues that hold less people, from 50 to 200 people, may also experience one fight per night.

With the possibility of having one fight per gathering in Mardi Gras, sport victory parades, street festivals, parties, clubs and other entertainment venues and not knowing when a fight may start, it's crucial for mayors and venues owners to prevent fights from ever happening in order to have all patrons safe and with the intention of always keep coming back.

Problem Summary

Venue owners cannot count how many fights they have seen every day at their grounds. It happens when nobody is expecting and there are always risk to safety of the crowd. And specially for venue owners, they also have to deal with damages to the property. In clubs, for example, table, chairs, lamps, glasses can all become part of the brawl. The crowd that is not involved in the fight, start to leave and quickly one night of profit becomes one night of expenses. Normally clubs, for example, are only busy on the weekends, which makes a fight affect their month income.

Problem Statement

Provide a solution that integrates with the surveillance cameras of the venue, and with expression detection, advise security guards to move towards the possible "epicenter" of the fight, in order to prevent it from ever happening.

Approach

Owning an entertainment venue or holding big crowds on the street takes a lot of investment. For this kind of business to keep on thriving, it's mandatory that fights do not happen in any time.

Just like in the movies, where a crime can be avoided, our solution **nonLutte (noFight)** will capture video, identify faces and anger/fear expressions, which will trigger an alert for security personnel to move closer to where a fight may happen.

KEY PERFORMANCE METRICS

KPI	Definition
- Percentage of expressions detected	Measures the expression detected against the number of faces detected
- number of expressions detected with a combination of anger and fear	This measures the number of possible fight scenarios avoided
- online real-time availability	Measures availability of
- number of fights avoided	Measures number of fights avoided by a combination of faces with anger and fear detected
- application processing time	Measures how fast it processes images to detect a combination of anger and fear
- Customer satisfaction index	Measures customer satisfaction per event covered through feedback rating system

Project Features and Advantages

Expression recognition technology has been implemented in many commercial applications and has a very good market prospect. Emotion recognition is a person's subjective or objectively hidden mental state. Detecting this mental state has nothing to do with a person's privacy, but hopes to better use this technology to serve society and individuals.

Emotional intelligence analysis technology uses human biological principles to perform non-contact intelligent analysis of the potential emotions of people in video images, that is, to capture micro-vibration images of the subject's head and neck through a camera, and use related algorithms to collect micro-vibrations of the head and neck muscles. Inductive, statistical, and comparative analysis of the sampled data yields the corresponding emotional index, including attack power, stress, tension, suspiciousness, balance, self-confidence, self-control, energy, reaction speed, and degree, and display it in the form of data reports and graphics user. There are currently four major characteristics:

1. Quick and easy. Check each person for less than 5 seconds

2. accurate and objective. Different thresholds can be set for objective screening.

3. Friendly shielding. No contact and no interference.

4. Intelligent early warning. Real-time dynamic early warning function.

User Interface

The interface will present the main cameras that are being used at the venue that cover the entire area. Whenever the application detects an angry face, a message will be displayed to the user stating the security point closest to the location of the camera was alerted.