**AQA PROJECT PROPOSAL**

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| Candidate Name | Angelo Fernandes |
| Proposed Project Title | Emotional Feedback Analytics for Video Advertisements |
| Type of Project - Investigation or Problem  *(If an investigation state the proposed hypothesis to be investigated.)* | Problem |
| Briefly describe the background to the problem / investigation.  *(Include here details of any third party who will provide any advice / support or who could be used to help evaluate the solution.)* | Advertisers today rely heavily on click-through rates and viewing durations to judge an ad’s effectiveness, but these metrics only tell what users do and not how they feel about advertisements. Emotional engagement is a powerful predictor of brand recall and intent of purchase, yet current solutions rarely ever capture a viewers’ real-time facial reaction. By applying computer vision and machine learning with webcam input, we can detect and be able to quantify the emotional response of viewers at key moments in the advertisement. |
| Briefly describe the problem / investigation to be done.  *(Give sufficient detail to enable a third party to understand the problem and its scope. Do not go into masses of technical detail here.)* | When users watch a video ad online, their facial expressions are not captured. Advertisers lack grounded, time-mapped data on the emotions of their viewers. I will centre on building a system that:   1. Detects the viewer’s face using webcam and automatically pauses the ad if no face is visible 2. Captures still frames at predefined timestamps and applies a trained ML model to classify basic emotions 3. Stores anonymized emotion labels in an SQL database 4. Presents aggregated feedback in an advertiser portal, showing emotion-over-time graphs 5. (Optionally?) Rewards users with points or gift cards for completing an ad viewing session. |
| Describe how the problem / investigation is currently carried out. | Currently, if advertisers want to investigate ad effectiveness or consumer product responses they might use – for example –   * Manual user studies: so focus groups or surveys – asking participants how they felt. This is time-consuming and subjective. * Basic analytics platforms: tools like Google Analytics that tell you who clicked or how long they watched * Third-party emotion-AI services: solutions exist, however they tend to have expensive subscriptions, processing videos offline and lacking real-time interactivity or integration with reward systems for consumers. |
| Describe how you propose to solve the problem / carry out the investigation.  *(It is not necessary here to state what programming language will be used or what programming skills will be applied.)* | 1. Face detection and Control  * Process webcam frames and detect faces * Integrate with video player so that playback pauses whenever detector fails to find a face for more than 2 seconds  1. Emotion Recognition  * Train a CNN (Convolutional Neural Network) on a pre-existing dataset (such as FER2013, AffectNet, RAF-DB and other datasets recently looked at) to classify a set of core emotions * At predefined timestamps (marked in the ad metadata), capture the current face frame, pass it through the trained model and record the emotion label and confidence score  1. Data Storage  * Using an SQL database  1. Advertiser Portal  * Build a web application connected via REST APIs to the backend * Implement a secure login for advertisers * Provide upload functionality for video ads and set capture timestamps and have a dashboard  1. Rewards System (optional?)  * Simple point based system, where users earn points per completed ad sessions, redeemable for rewards (if available) * Integrate a basic “wallet” table in SQL and show point balances in the viewer’s interface |