Human Face Detection System to Identify Online Child Victims Abused in Sexual Trafficking Cases in Thailand
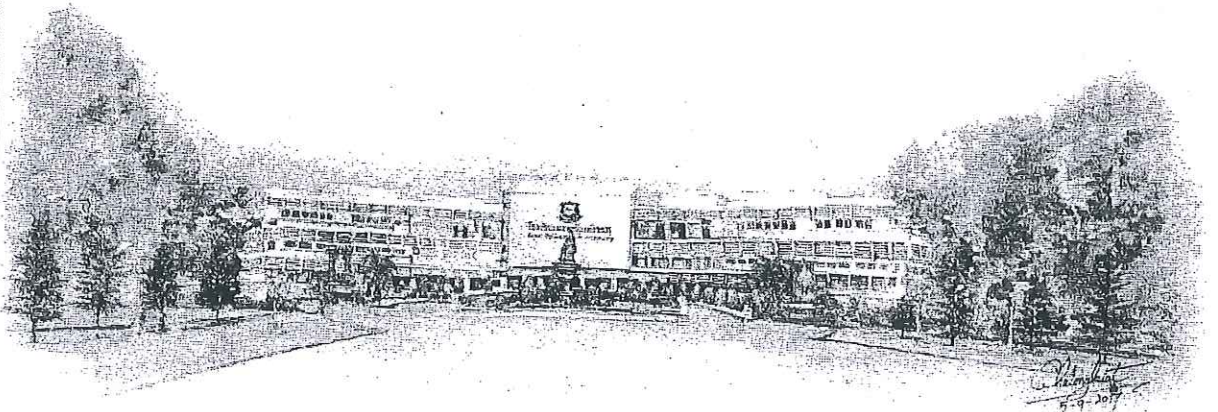
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With two keys featuring the system effectively improve the conventional process filtering manually each victim upon file-by-file after digital evidence acquisition from devices at crime scene collection. The first role is to analyze several sexual materials, or even regular pictures appeared human faces on them, those found on a copy of imaging after duplication forensically, then prepare with a good condition technically before going ahead submission into the system. The second role is to compare with social media profile pictures, all of them are publicly accessible.

Therefore, this study eventually focuses to comparative the similarity level of the detection acquired images extracted from computer devices and profile pictures gathering from the public-access social networks for applying to a developed system, which it is a resource limited.

Related Works

Leqi Liu, et al. (2016) studied relationship between social media and personality under the term of phycological aspect. They designed the method to gather public profile picture into their provided system. Their assessment also combined with texts of tweets that profile instances performed recently. For data sets, the researchers collected from Twitter data which were separated into two types including: TwitterText and TwitterSurvey. Before starting image extraction, they conducted text analysis for grouping personality and age by processing at least three thousand posts each selected Twitter's user. For image works, they preferred to apply some techniques based on deep learning method, including Face++2 and EmoVu3, as the key features of facial related image extraction. Face++2 has the most ability to improve the system making accuracy with sampling facial presentation. For EmoVu3 was aimed mainly to train the system emotional detection expressing by faces on profile pictures. With the powerful

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training model, they could supervise the system into certain categories: color, image composition, image type, image demographics, facial presentation, and facial expressions.

Methodology

Social profile pictures detection is an important technique for finding and comparing potential victim taken online. In machine learning techniques, the features are expected to compare an acquired image to current profile pictures appearing online.

Sampling from a variety type of media files must have a human face used for training and testing sets. Suitable features after checking on many and many models are selected by applying notable selection techniques. Then, the model will be up to the next stage the comparison process. The main techniques to complete the comparison including decision tree, logistic regression, multilayer perceptron, and related image processing algorithms.

Face Detection is a critical process to find a person's face from an image or video, then providing as a processed image with an expected human face for the next step. After basically detection, the proper images with human faces is ready for next algorithms. There are several ways for detecting faces today. The good face detection algorithms help to identify the faces precisely and quickly. One of the most technique is a Viola-Jones method. This algorithm offers a way of presentation called a intergal image. It is supported by processing and analyzing features. It is upgraded based on AdaBoost which has a effective classifier function. Its cascade feature also extracts non-relevant background out of the objective in the picture.

Face Recognition consists of the key aspects of capturing a face, separating it from the image, placing it face-to-face, capturing facial features, and

then comparing it to the database. This process requires a large-scale dataset to train a software. For instance, Facebook has taken over four million images of four thousand people at least to practice a new way for the powerful deep neural network. One key feature is to draw up to a three-dimensional model to align the face to a new face.

A comparison that is expected to be accurate is required a very large-scale data set for training modules. This study was selected from the Social Face Classification field (SFC), and then examined with a database of Labeled Faces in the Wild (LFW). They have ability to detect accuracy up to 97.25% near human detection at 97.53%.
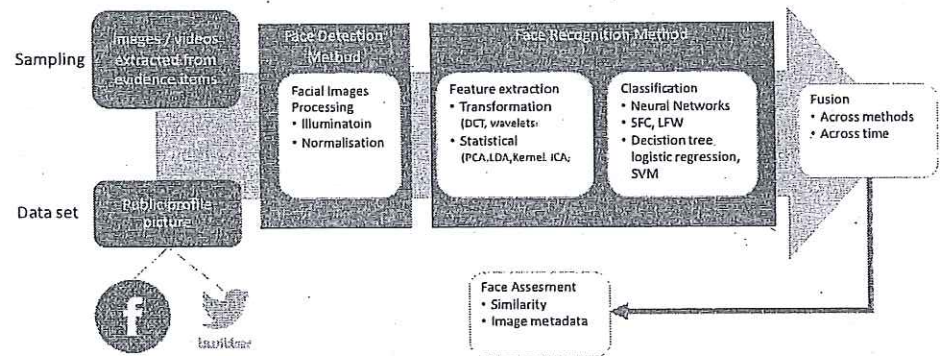

Figure 1: Conceptual framework

The above illustrator represents how the critical process work within this study. Image data will get from two distinction. The first source is the collected evidences which are digital devices seized from crime scence and found a number of sexual materials inside. Another data set is from public and online provided sources. Facebook and Twitter are the key role of social network platforms that the researcher prefer to examime an experiment. Then, the provided images will be input into the desired system staring with the first stage, face detection method. After cleansing data, the images will bring to the next processing called face

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