

Abstract

Human Facial Expressions plays an important role for identifying human action or intention. Facial expressions can represents any specific action of any person and the pattern of violent behavior of any person strongly depends on the geographic region. Here we've designed an automated system by using a Convolutional Neural Network which can detect weather a person have any intention to commit any crime or not. Here we proposed a new method that can identify crime intensions or violent behavior of any person before executing crimes more efficiently by using a very little data of facial expressions before executing crime or any violent tasks. Instead of using image features which is a time-consuming and faulty method we used an automated feature selector CNN (Convolutional Neural Network) model which can capture exact facial expressions for training and then can predict that target facial expressions more accurately. Here we used only the facial data of a specific geographic region which can represent the violent and before crime facial patterns of the people of whole region.

Topics

Bioinformatics, Humanitarian Challenges, Humanitarian Apps & Opportunities

Key Words

Convolutional Neural Network Model, Crime Activity Identification, Violent Behavior Detection, Facial Expressions Analysis

THE SITUATIONAL APPROACH

Situational crime prevention has, of course, a long history in criminology (e.g., Jeffery, 1971; Mayhew et al., 1976; Clarke, 1992). and its practical utility, if not its relevance to criminological theory, has been widely recognized (Roshier, 1989; Gottfredson and Hirschi, 1990). The attraction of such measures lies in their apparent simplicity and practicality. Instead of trying to change criminal motivation or offender self-control—both of which are regarded by traditional criminologists as deep-seated behavioural tendencies, and neither of which has responded conspicuously well to intervention by the criminal justice system—situational crime prevention attempts only to regulate their active expression by way of criminal behaviour. Correct identification of the goals of criminal activity is, of course, required, but that is the extent of the situationist's interest in criminality. Offenders do not have to be identified before they can be dealt with. Instead, situational approaches have the ability to constrain the criminal actions of us all. This combination of modest aims with wide reach makes situational prevention an attractive option.

Requirements of the Situational Approach

Situational crime prevention, then, involves the development of techniques to prevent, constrain or disrupt criminal activity. Characteristically, these techniques use a variety of environmental manipulations to alter the risks, efforts, and rewards of offending, and the methods are rapidly developing in number, range and sophistication (cf. Clarke. 1992). Such intervention relies upon two important requirements: (1) the need to be crime-specific (Cornish and Clarke, 1987, 1989); and (2) a familiarity with the procedural aspects—that is. the details-of crime commission in relation to specific crimes. In a general way, the importance of these requirements is well recognized. But when it comes to applying them to the task of crime analysis and crime control, little further guidance apart from these prescriptions is available to the researcher or to the designer of situational measures. In practice, of course, the conditions governing the emergence and definition of crime problems often suggest an appropriate level of specificity. Thus, where repeated crimes of a particular type occur within a particular location (Matthews, 1992; Poyner, 1992), or where a series of similar crimes involving similar locations or targets are committed (Hunter and Jeffery, 1992: Sloan-Howitt and Kelling. 1992). the need to be crime-specific is dictated by the presenting problem. Again, although detailed accounts of the crime-commission process are often not available, they are often not necessary. Restricting access to the crime setting or hardening targets often provides all that is required for satisfactory crime prevention. Decision-making frameworks offer a useful way of capturing and explicating action at the micro-sociological level, since they enable the situational variables influencing action and action sequences to be readily specified. But while research on offender perceptions and decision making (Brantingham and Brantingham. 1978. 1984. 1993b; Bennett and Wright, 1984; Clarke and Cornish, 1985) and on rational choice and routine activity perspectives (Cornish and Clarke, 1986; Clarke and Felson. 1993) has produced a conceptual framework for the situational analysis of crime, situational prevention studies have often proceeded quite successfully without much reference to these theoretical niceties. There are, however, a number of reasons why it might be useful to provide a more detailed theoretical context for, and specification of, the two above-mentioned requirements of the situational approach:

Most obvious—now that the range of situational measures is so great (see Clarke. 1992. for classifications of techniques: and Ekblom, 1994. for an attempt at a comprehensive classification of preventive action)—is the need to relate such measures systematically to possible intervention points throughout the crime-commission process.

Since—notwithstanding the beneficial discipline imposed by local crime problems upon crime-specific thinking —demands to tackle crime are often couched in the most general of terms, some way of addressing the issue of levels of specificity and how they might relate to each other is required.

A conceptual framework within which to elaborate the whole decision process of crime commission is required, one that will encourage the detailed specification of the actors, contexts, elements and sequences of action which together make up a specific criminal activity.

Studies of criminal decision making for the purposes of situational crime prevention could benefit from modes of eliciting information which encourage appropriately crime-specific reports and detailed accounts of the crime-commission process.

The Importance to criminological theory of a detailed understanding of the crime-commission process has yet to be fully appreciated. We need to know more about the crime-commission process because:

Crimes form linkages among themselves.

These linkages may form and grow in part because of the act of crime commission itself.

Crimes form routines, and routines constitute an integral part of lifestyles.

Lastly, there may be some payoffs in relation to our understanding of the nature of offender decision making and of its implications for the rational choice perspective. It is to all these issues that this paper addresses itself

How Media Actor's and Highlighted Small Number of Negative Characters Influence on Human Psychology

In recent history, progress has been made in the way in which minorities are portrayed on television. The unanimous declaration that television is very influential especially in the adoption of beliefs in children has caused a flurry of changes to take place in the last five years. Despite these changes, however, there are obstacles that must be overcome before everything is the way it should be. These obstacles include ratings and, more importantly, the people at the top who decide on programming. Until this changes, the progress will remain slow and at times non-existent. There are still far too many shows that portray minorities in negative ways and too few that show reality.

Throughout the course of recent history, American popular (pop) culture has been defined and characterized by the innovations surrounding the television. Television has the potential to disseminate information to millions of people in a way that no other medium of exchange can match. As a direct result, mass media has become increasingly entwined with television and less so with newspapers, magazines and other print sources. Television, whether it's the news, sitcoms or dramas often gives people insights into worlds that are unfamiliar and vastly different from their own. In fact television can be the only exposure that some people have to other worlds and/or different parts of society. Consequently, the content and portrayal of people on television becomes extremely important as it is possible to heavily influence the thoughts and beliefs of a large number of impressionable viewers most notably children who most often have no frame of reference. According to MediaScope, a column that monitors diversity in television:

Considerable public concern has arisen over the issue of media diversity, as it is generally accepted that mass media has strong social and psychological effects on viewers. Film and television, for example, provide many children with their first exposure to people of other races, ethnicities,

religions and cultures. What they see onscreen, therefore, can impact their attitudes about the treatment of others. One study found, for instance, that two years of viewing Sesame Street by European-American preschoolers was associated with more positive attitudes toward African and Latino Americans. Another study found that white children exposed to a negative television portrayal of African-Americans had a negative change in attitude toward blacks. (Diversity in film and television: MediaScope)

This illustrates the importance of the social responsibility that each and every member of American society has to ensure that television portrays minorities accurately and without bias.

Because television is such an integral part of society it is imperative that the wrong ideas and values do not go across the airwaves and into the homes of unsuspecting young children. According to a report named Reality in Television, "Studies have shown that television teaches stereotypical attitudes and preconceptions about people and lifestyles that they would have no contact with outside of watching the way these people are shown by television" (3). Unfortunately, in a time where children spend more time than ever watching television unsupervised, the television becomes the teacher.

Children of course are less likely to distinguish a stereotype from reality, and when they watch an ideal family on TV in a perfect home with no money problems they may wonder why they don't have the same. If they see things on TV that they don't have a comparison in real life, the TV image will be the reality to them. When images and ideals presented at a young age take hold, and are reinforced over years of viewing, these images become reality. They may feel inadequate in comparison to the lives some seem to lead, and superior and hateful to those portrayed in a negative way, even though that portrayal is not true. (Reality in Television)

Movies, television and the news are all guilty of what most people would consider racist beliefs and acts. Despite the progress that has been made in the industry, three decades of reforms should produce results significantly more substantial than those that we have witnessed. When Homeboys from Outer Space can air on the television, it is apparent that networks are not heeding the objections, cries and protests from our combined communities. Instead, they are glaring at the "bottom line" which is whether or not the show runs in the red or black. It is extremely difficult to apply pressure to the major networks and film producers when their shows, newscasts and movies continue to make money. This, of course, can be attributed to the positive portrayal of the majority and the negative portrayal of the minority. The majority population is so large that it can sustain its own market niche, thus enabling the industry to post profits even without the support of the minority coalition. As in any industry, the bottom line is money.

Portrayal of Minorities in the Film, Media and Entertainment Industries

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Poverty & Prejudice: Media and Race
June 1, 1999

Proposed Methodology

Since we can see that crime patterns as well as facial expressions and facial image properties varies very dynamically with changing situation, region, time, crime type and many more. Analysing all of these is must needed in order to prevent the crime activities.

As we know that, behaviour and psychology of human beings of most of the regions or cultures are heavily influenced by their media and surroundings. Especially all the people of any certain region tries to follow the patterns they all see or observe on media and news. Almost all population of any region commonly try to copy the most common strategies they all are seeing on media and news. Media is covered by most of the population and the strategies they see on it influence their mind for executing any types of non-professional crimes in a same manner. Even sometimes the positive characters who is portrayed as racist, criminal or as a role model become the real role model for non-professional criminals. Their behaviour, attitude, facial expressions, movements, strategies all are copied by maximum non-professional criminals at almost all crime activities. For these reasons the patterns of crimes become similar at a certain geographic area and it makes it easy to find out the crime activities.

We find out such some characters like media actors and they are:

- Media actors of a certain geographic region
- Negative Characters on television of a certain geographic region
- Very Professional role model criminals of a certain geographic region
- Criminal but public hero type characters of a certain geographic region
- Such characters who become the news headline for their tactful criminal activities
- Social Media activities of peoples of a certain geographic region

If we analyse above mentioned character's facial expressions before they're executing the crime, some of the similar expressions should be found over the non-professional criminals facial

expressions before executing crimes at a same geographical region. But for gaining very accurate result from these types of data, analysing more properties like body movement, voice, and characteristics should bring better result.

Collecting Images

As we mentioned above, at first, we collected some pictures which contains all the properties of human faces who are attempting to commit a crime of those categories of people. These are our targeted pictures which we want to identify as they are attempting to do a crime. All of our collected photos are the faces of criminals just before the situation of doing a crime or planning for a crime. These images are used as samples of human faces before committing a crime. Next, we have collected some general facial photos seems normal human faces who are not suspected as criminals or have no intentions to commit any crimes of same geographical areas. These photos included smiley faces, talking or communicating people, working, playing, sitting, gaming and some other normal working time captures. All of these photos are collected from various websites and image search engines. Because it's quite hard to find an image database which contains the facial expressions of various peoples just before committing the crime, we selected the faces of various actors acting on a crime scene on various TV shows or movies. We selected the best matching photos of faces represents the pre-crime expressions perfectly on various situations. We collected the face images from various directions with different light intensity levels for our experiments. We included the faces of humans between age range 20-70 for both targeted sampling and negative sampling. We covered almost all categories of images for our experiment. We made two sets of images labeled as suspect and general face.

Image per-processing

We have done some manual pre-processing tasks for formatting and preparing all images for our experimental setup on Adobe Photoshop. After collecting all the images of 2 different types, we again selected the best qualities of images for getting best and perfect results. We excluded all the low or medium qualities of images from our data. We excluded images containing more than one face, blurred images, images containing totally different background from most others, images with very low brightness or contrasts, harder to classify, facial expressions with mixed expressions and not appropriate for our experiment. Then we resized all images to () pixels for scaling them and getting the optimal result.

Experiment Design

Feature Selection

After gathering all photos we selected and extracted total 8 features from all the features. Most of the features are based on Robustness, Geometrical Shape, Colour and Texture based. These selected features are extracted from all the images for analysing the performance of our designed algorithm. Before extracting features we converted the RGB image into a binary or logical image using MATLAB with a binary **threshold 0.7**. Selected features are used for making a trained automatic system based on neural network. This neural network based system can select and detect various features of a picture in different situations and can identify the criminal's face by using previous knowledge.

For differentiating the two types of faces, knowledge based selection is the best method ever. But the types and patterns of facial expressions differ from region to region, crime to crime, criminals to criminals. For this we selected total 8 features which can be used to detect the common changes at each and every situation and can successfully differentiate 2 types of images using minimum time.

Labeling

