About the dFACE project

by Sam de Silva, October 2000

In our technology-laden towns and cities, the surveillance camera is an intrinsic part of its design. From the foyers of buildings, to underground train stations, to shopping centres, to city corners; all are equipped with cameras that watch us. Today's surveillance camera is becoming deliberately obvious, often feeding its observations back to the observed. The justification for surveillance cameras is to promote safety and reduce crime. But we can easily imagine a more sinister use of surveillance technologies.

A system called Cromatica claims to be able to detect if someone is contemplating suicide in underground train stations. Cromatica analyses our movements and matches it against stored information about how suicide victims behaved just before jumping in front a train. Another system capable of reading faces, is being developed by the Salk Institute. It claims to be able to detect a person's emotional state by using high-speed cameras. "When someone is lying, their true feelings often flicker across their face in what we call a micro-expression, which is quickly covered up by a posed expression", says Paul Ekman, long-term face researcher and professor of psychology at the University of California, San Francisco. Ekman is working with Salk scientists to create real-time analysis of facial expression in order to reveal emotional states.

Researchers and private corporations are pushing the boundaries of technologies capable of analysing our behaviour. There are of course numerous beneficial applications for these technologies, such as detecting a potential suicide attempt. But there is also the possibility for misusing their capabilities. It doesn't take much imagination to come up with some very negative applications that interfere with our civil liberties. We cannot stop the increasing sophistication of surveillance technologies, nor can we enforce a particular direction to their application. However, what we can do is inform ourselves as to the rapidly developing technologies and engage in debate about how they are utilised.

The face is one of the most sacred features of our self. It is the primary way we identify each other, and our complex expressions enhance the way we communicate. Sophisticated software and hardware are capable of interrogating the human face in fine detail, matching faces and evaluating expressions. However, this automatic analysis relies mostly on stereotyping the human face and its attributes. Therefore, these systems will make their evaluations based on the way we look.

The dFace project is a media campaign aimed at raising awareness about current and potential applications of technologies which analyse our face and claim to be able identify us and predict our behaviour. The project doesn't call for the banning of such technologies, rather it wishes to inquire further about facial analysis systems and to inform a broader community as to their purpose and function in our society.

Facial analysis is conducted by law enforcement agencies throughout the world. The mug-shot and identity kits are helpful in identifying culprits and solving crime. Sophisticated systems for the "public safety market" can detect the faces of known troublemakers and exclude them from entry or participation. Interestingly, a company that specialises in facial analysis software also provides products for prison inmate processing as well as for locating and identifying children. Many companies market

software packages capable of detecting a face and putting an identity to it. They market the technology with the claim that it reduces crime and increases security and safety.

Matching an action or transaction with its owner is not only the wish of a dedicated detective investigating a crime but is also of great interest to groups and companies. Various specialised technologies, which all fall within the realm of surveillance but referred to as 'customer profiling', already analyse our lives and actions, most of the time without our knowledge or informed consent. And the information and data gathered could be re-analysed in ways which were never originally intended. Once we have been profiled, there is no real way of knowing what happens to the collected data.

When we use an ATM machine, transaction details are recorded and stored to build up a profile of our spending habits. The bank would claim that this would enable it to better service the needs of its customers. In the US, profiling data from a particular ATM showed that high number of transactions were being made between midnight and 2am. The reason for this was that customers were withdrawing money to spend in the nearby red-light district.

The current use of electronic tags on vehicles has been promoted as an efficient way of collecting tolls that does not require the driver to slow down to physically pay for the use of the road. But these e-tags are effectively tracking devices able to accurately monitor the movements of a vehicle. Once all cars have these devices, there might be a temptation to apply automatic tolling elsewhere or to exclude certain cars from parts of the city. When we use a mobile phone the number we dial, the time and duration are all recorded. It is possible to approximate, with increasing accuracy, the location from which the call was made.

Our use of technology leaves behind a shadow, a memory of our actions that is stored and transferred through networked databases to unknown collators. We are told by marketing departments that by profiling our behaviour, companies will be able produce and promote more products and services that are based on our true desires. However, potential for misuse of these data shadows, this profile information, is very high because of the lack of regulation or more importantly, public awareness concerning what is being stored about us and how this information is being used to effectively control us.

The broader methods and implications of profiling are beyond the scope of the dFace project, however these will be considered and included where appropriate. The dFace project aims to explore and problematise the applications and outcomes of facial analysis technology. A focus has been placed on investigating the role facial analysis plays in matching an action with its owner and the effects this would have on people and the society we live in.

We have a photograph of our face taken when we attend university, start a new job or apply for a driver's license. And our face is also captured passively, without our direct consent through surveillance cameras, which are quickly becoming a standard part of our environment. But amongst the public, there seems to be a lack of concern or even curiosity as to who has access to our captured face, how it is used and how long it will be kept for.

The writings of Michel Foucault on the panopticon, social observation, power and discipline, and George Orwell's vision of 1984 were early motivations for the dFace project and continue to provide inspiration and direction. Science-fiction books and

films which signpost to dangers of 'over-machining' our society also provide inspiration. The many contemporary academics and writers who are exploring surveillance and its surrounding sociological issues will also provide discourse to work within.

The dFace project wants to trace the path the face travels once it has been captured by a camera. It wants to understand the nature of analysis carried out and if the face is stored or distributed to other parties. Further, the project wants to investigate what effect the pervasive use of surveillance cameras and their ability to capture our faces, has on us, especially when this data is combined with other digital shadows we leave behind during our daily transactions.

The research carried out by the project will not be exhaustive. Rather, the outcomes will provide direction to future research and also adequate content to develop creative media strategies to inform the public audience about the applications and implications of facial analysis technologies.

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