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Disclosed eyes
An Interactive Installation on the Impact of Hypervigilance

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Abstract
Disclosed Eyes is an interactive installation that explores a speculative future where the current potential of facial recognition algorithms is taken to the utmost. It's based on the innate obscurity of these mechanisms and seeks to reflect on the impact they may have on the individuals' privacy. In the installation there is always one player who's being exposed to the judgment of the viewers and has all the actions in-game being monitored at all times. Apart from the installation, there is also a video regarding this subject, that illustrates the same experience that the player faces.

Keywords: Interaction Design, Artificial Intelligence (AI), Hypervigilance, Data Surveillance, Obscurity, Installation

1. Theoretical Background
Facial recognition is a system designed to identify a human face from an image or video. It's not a recent technology, but its application has become exponential nowadays. Some examples are two-factor authentication for mobile devices, or even systems developed for anti-terrorism purposes. However, this type of technology can jeopardize the citizens' right to privacy. Therefore, it is essential to find a middle ground between the privacy protection of the citizens and the practical usefulness of these algorithms.

1.1. Facial Recognition
Algorithms like facial recognition are useful in countless situations. These technologies are slowly covering the social networks with purely playful or whimsy features. For example, the filters designed to recognize and age a human face, or even alter the gender, in real time like the ones found on FaceApp. Another example of the use of facial recognition technologies is as a complement to the search engine of romantic social networking-based apps, where the users can use filtered searches according to their appearance preferences. However, the substantial advantage of facial recognition arises in the implementation of these algorithms on philanthropic scenarios. Per example, the ones used by humanitarian entities to identify and rescue victims of human trafficking. A recent example is the report from the New Delhi Police[1], who, in just four days, rescued more than three thousand missing children. Another case is the use of this software for the diagnosis of rare genetic diseases in Africa, Asia and South America.

Lucas Introna and David Wood introduced the concepts of silent and salient technology[5]. Facial recognition algorithms are considered an example of silent technology, because their performance is embedded in the surveillance systems, making them impossible to detect. Therefore, they work in an imperceptible and obscure manner. Other aspects to be underlined are, on the one hand, the unilaterality of the operation itself, since it does not require consent from their targets. On the other hand, their flexibility due to the wide range of possible applications - from tracking to prevent theft or fraud, to searching and identifying possible acts of terrorism. However, Introna and Wood highlight the obscurity of the operation in this type of technologies, emphasizing two factors: the general hardship of analysing and inspecting the algorithm, and the excessive legitimacy that it is embedded in it. In fact, taking into account that these technologies are proprietary software objects, it would be extremely hard to have the required access to the code in order to analyze it and its complexity. Furthermore, considering that these are algorithmic processes of artificial intelligence that optimize themselves autonomously, it's not even possible to perceive for sure which aspects of the human face are being analysed. This makes the algorithmic software operationally more obscure. Moreover, most of these systems are based in very sophisticated statistical methods, only interpretable by experts. This set of features encourage the apparent legitimacy of these technologies, and can even hold more authority than exclusively human-based recognizing processes.

1.1.1. The Consequences

This missjudment and overvaluation of facial recognition enhances the acceptance of false positives and can lead to biased results or even discrimination, influenced by the algorithm. For the information processing to be efficient, facial images are reduced to a numeric representation. Consequently, some information is discarded, as it is considered incidental or irrelevant. However, this choice is purely algorithmic, which leads to the questioning of possible consequences of this reduction process. As the database increases, more and more faces are generated with closer proximity, making the recognition task more difficult. For this reason, the system will always be better at identifying those that look less similar to those already on the database. One of the variables of these algorithms is the identification threshold, which can be increased or reduced. This parameter affects the rate of false acceptance and tolerance due to the accuracy of the search. If this threshold is reduced to 70% accuracy, the performance of the system is increased and, consequently, the face being tracked may be detected more often. But, as a result, the number of false positive cases would increase. The problem is that, if this identification threshold is raised, for example, to 80%, the number of false positives would decrease, but the number of false negatives would increase. This would lead to an obvious devaluation of the use of this system. This way, the small differences in identifiability, called biases, will affect those who are easier to be identified by the algorithm (African-Americans, Asians, dark-skinned people and the elderly, in the american, australian and european context), meaning that they are more likely to trigger the alarm and be detected. Thus, the idea of greater precision achieved by the algorithm running at a higher level, will, again, contribute to the overvaluation of the authority of these softwares. With this added factor, the most easily recognizable groups will be subjected to a greater discrimination, scrutiny and judgment.

1.2. Hypervigilance and Data Surveillance

The trivialization of facial recognition leads to an unlawful intrusion into the privacy of individuals. As Introna and Wood pointed out, technologies like this do not require the consent of their targets, which triggers a distrust in the use of this technology. In addition, the amount of personal networked information, including photographs and videos, contributes to the colossal database that can be accessed within a few clicks. The combination of the ubiquity of video surveillance with the colonialism of our data, and adding the algorithms such as facial recognition, which are already in use today, makes our reality a dystopian scenario. With the current technological breakthroughs it is already possible to follow any individual at any time, or all individuals at all times. Besides that, facial recognition significantly expands the control of governments. But do we really want to remain anonymous, when we expose ourselves daily on social networks? Everyday, we witness an unreasonable contribution to a scenario where our privacy is questioned or even surrendered.

2. Design Research

2.1. Purpose and Goals

Through a subversion and ironic perspective, we seek to instigate awareness and reflection in the general public regarding algorithmic data surveillance. On the other hand, we aim to convey the usefulness of facial recognition and, also, its incorrect appropriation. Through an artistic installation, we intend to provide an experience of a possible dystopian future. One of the main goals of this project is to mirror the usefulness of facial recognition through a positive connotation in the beginning of the interaction. As the narrative unfolds, the user is increasingly exposed to a subversive application of these technologies. The ultimate goal is that the interactor ends this experiment with an introspection on how to expose personal data, but mainly with the awareness of the ultimate potential of these algorithms.

2.2. Target Audience

Our target audience for this project are teenagers, young adults and adults. This is because, since they avail themselves of technology and social networks daily, they're also the most affected by the intrusion of their privacy. Inevitably, they are the ones who will suffer the greatest impact on this issue that will, in the short to medium term, affect the society's privacy in an irreversible way.

3. The Project

Disclosed Eyes consists of three fundamental stages. In the first place, at the installation, the viewer has two role options: play or watch. Both of these tasks are essential to the installation, as they represent the same issue from two divergent perspectives. The second stage is the game itself. Here, the players experience an immersive adventure, through virtual reality, where they are both morally and ethically tested. The public observes and judges the player in real time, through the broadcast provided in the respective room. At this point, the players make their choices, under the pressure of being watched at all times. Finally, the last crucial stage is the installation website. Here, it is also possible to observe the interactor's performance in real time, without being actually present at the installation. This represents a whole new level of surveillance, as anyone can watch the player without their knowledge.

Fig. 1 - Entrance Corridor

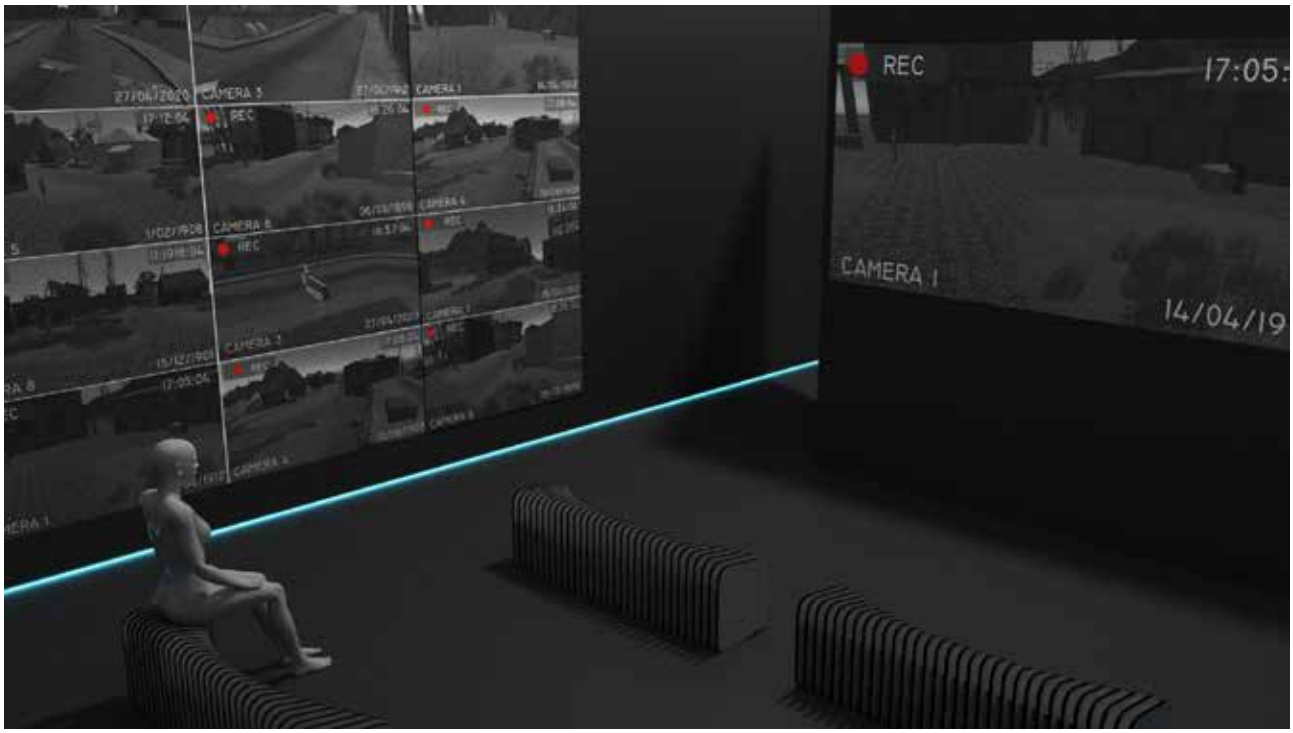

Fig. 2 - Viewers' Room

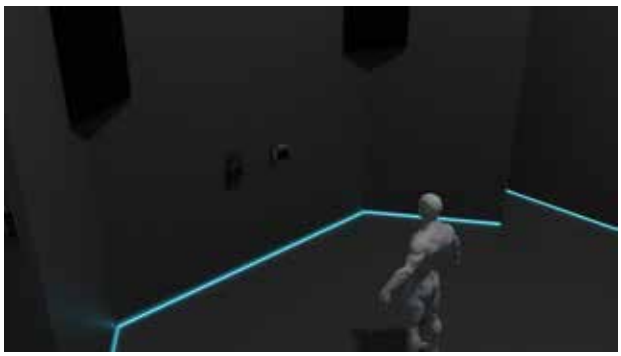

Fig. 3 - Players' Room

Fig. 4 - Exit Corridor

Here[11] the short-film developed for this project can be accessed.

3.1. Installation

Each player has a few minutes in this universe, where it is possible to fulfill one of the goals provided with total freedom over the game narrative.

3.1.1 Room Layout The installation has four different areas. The entrance, the main room - with the viewers' zone separated from the players' zone, and, lastly, the exit. Without revealing any information regarding what the visitor will experience next, the entrance (Fig. 1) consists in a corridor lit by blue ambient light, with a curtain in the background to separate from the next area. The viewer area (Fig. 2) has a total of six benches facing the main projection, and real-time images of the players' experience are being projected on every wall, making the public the authoritative figure of the installation. Close to the player (Fig. 3), there are two speakers, whose function is to channel the sound reproduced not only by the public present in the installation, but also by the viewers of the website. Finally, in the exit (Fig. 4), the player can relive their experience from the point of view of the public, since in this corridor there are projections of the game's surveillance cameras. Being these the images reproduced at the livestream website, the player realizes,

for the first time, that they were being watched also online.

3.1.2 Website Through the installation website it is possible to watch the livestream, where the different surveillance cameras of the game can be seen in real time, while being used by a player present in the installation. All CCTVs are available in the first menu (Fig. 5), and when any of the cameras is clicked-on, that camera appears in fullscreen (Fig. 6). This livestream holds great importance since it deepens the scrutiny and obscurity of the experience, considering that, in addition to the installation itself, the players' decisions were also being judged online without their consent.

3.2 The Game

The player has a score monitored at all times and when they start the experience they are assigned to the rank of Lower-Class. The player's actions in the game have a direct influence on their score, and can either increase it or lower it, depending on the positive or negative connotation associated with each action. On the one hand, the access to a zone on the map that requires a higher status is only unlocked if the player raises enough the score to reach that rank. Oppositely, if this score decreases to a certain level, the player reaches the Outlaw status, unlocking specific actions of this way of life.

3.2.1 The Concept In order to demonstrate the impact that the algorithms referenced above can have in the near-future, the game reflects a dystopian environment where the society is constantly divided by ranks and scores. Thus, right after the user enters the game, they immediately realize that all of their actions are monitored and limited. By taking this concept to an extreme level, the game contributes to the introspection and reflection of not only the player, but also those who observe it.

3.2.2 Aesthetic The realm of the game consists of three different and rank-separated areas (Fig. 7) - the Lower-Class (Fig. 8), the Industrial (Fig. 9), and the Upper-Class (Fig. 10). The game's aesthetic seeks to reflect this dystopian scenario. For example, while in the Upper-Class area, the houses are well built and visually pleasing, the Lower-Class area is mostly built from containers and wreckage. As for the characters, for the player to feel immersed in this realistic si-

Fig. 5 - Website Livestream

Fig. 6 - Website Livestream (Fullscreen)

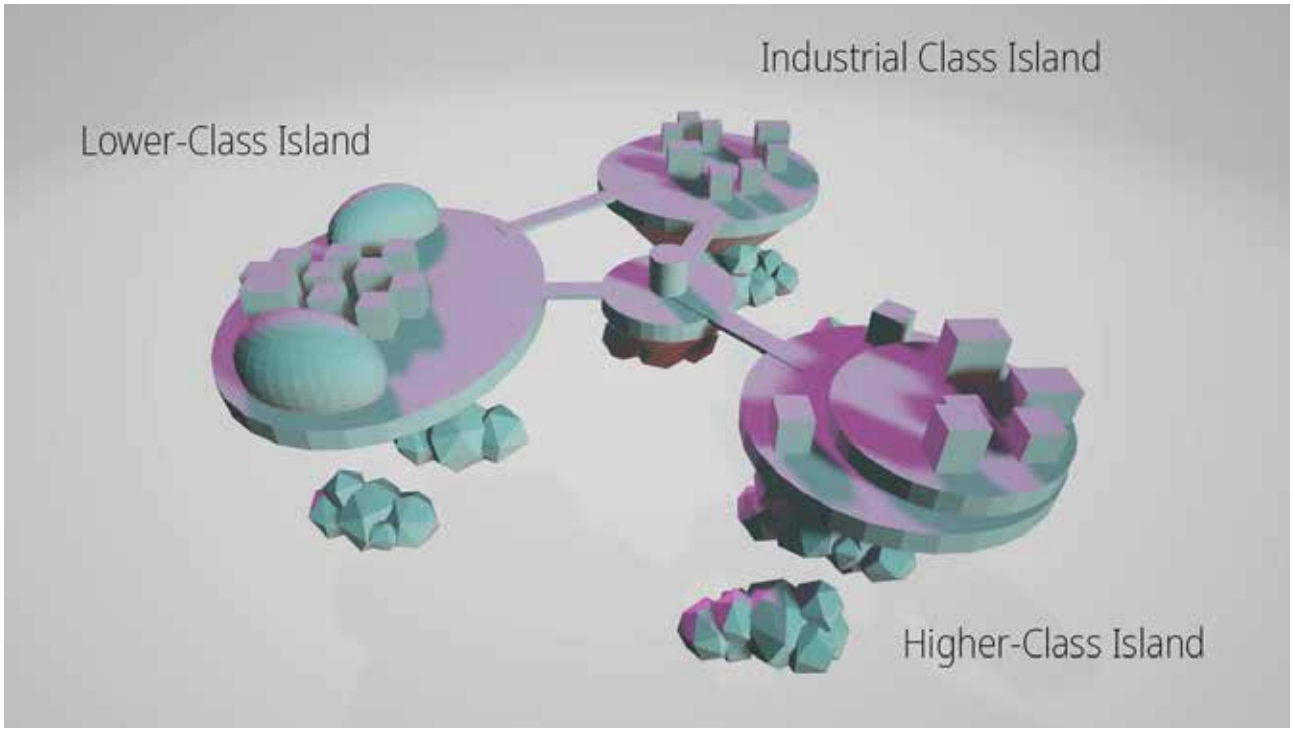

Fig. 7 - Game Map

mulation, the fictional characters that will accompany him throughout the game have a huge influence and must have some diversity. However, so that none of them stands out excessively, since there will be several recurrences of each, they refer to a very monochromatic color palette. Thus, the degrading and monotonous dimension of this reality is also emphasized.

4. Conclusion

In conclusion, this project aims to raise public awareness of the consequences and potential of facial recognition and surveillance technologies. By instigating this reflection, it promotes a debate about the future of these tools, as well as a new look on how our data is so easily exposed and, therefore, appropriated.

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Fig. 9 - Industrial Island

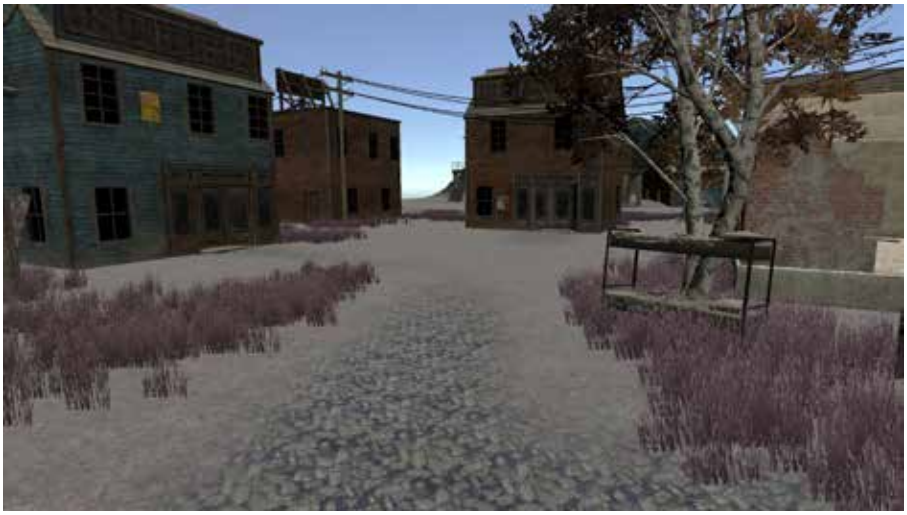

Fig. 8 - Lower-Class Island

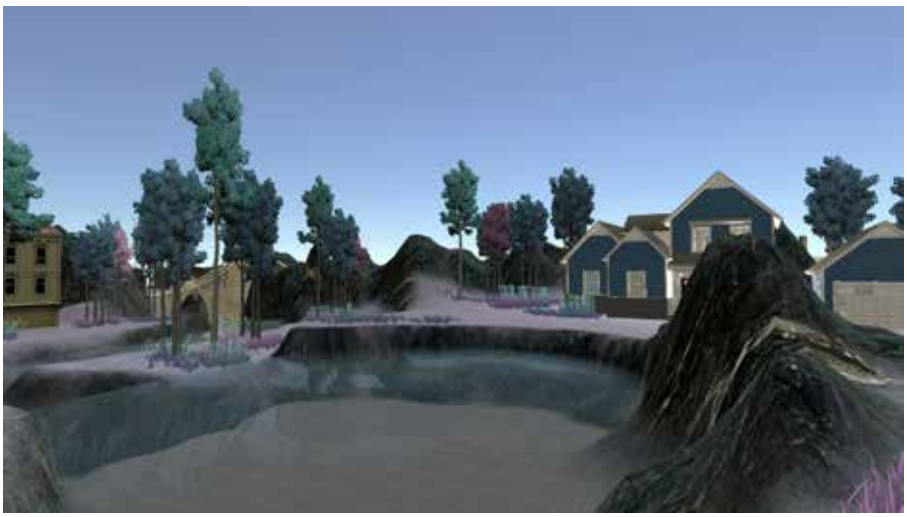

Fig. 10 - Upper-Class Island