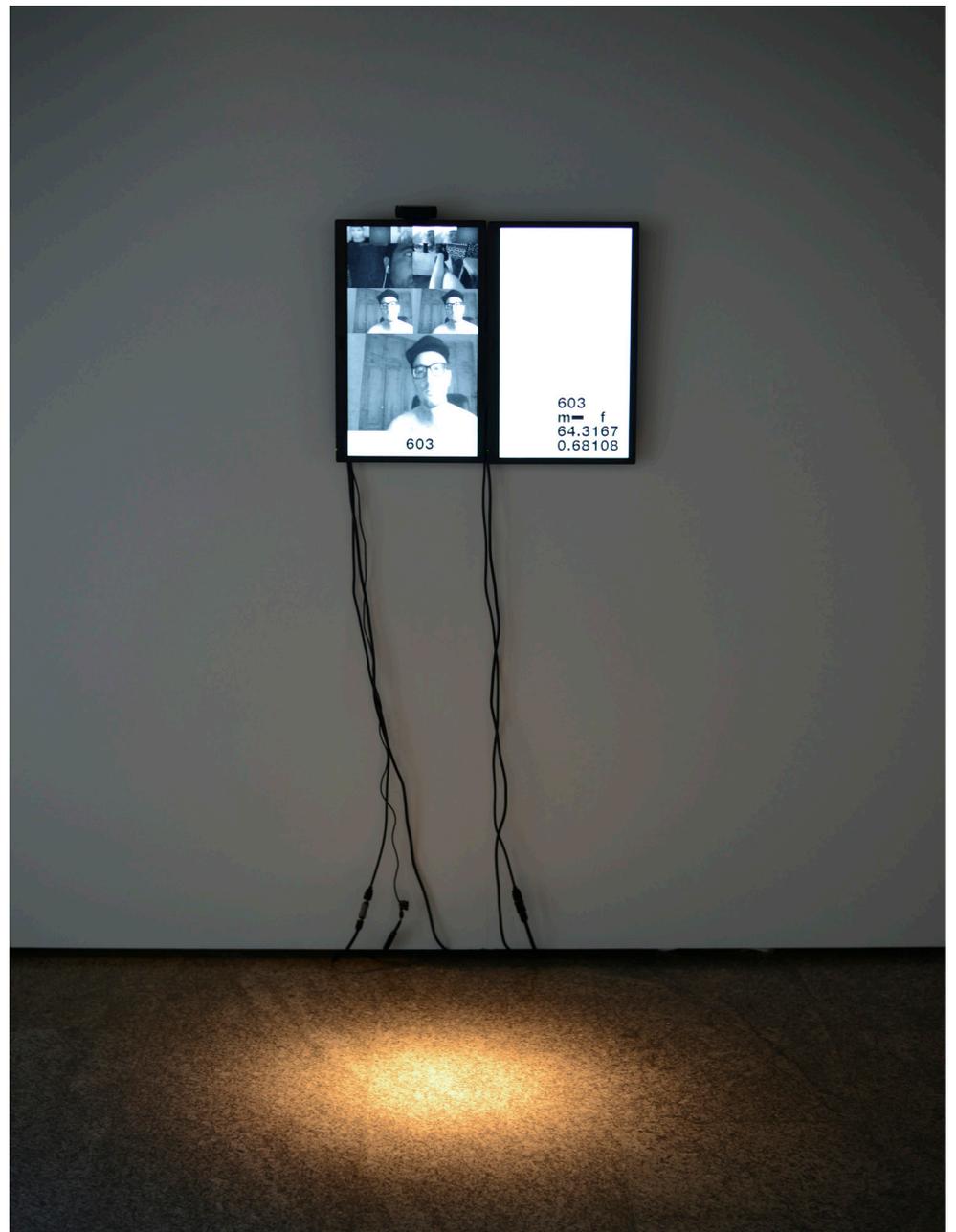**Andrés Villa Torres**
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Critical Mass

Keywords: Autonomous Systems; Online Social Interactions; Digital Crowds; Self-Exposure.

Abstract:

Critical mass is a connected installation exploring behaviours of automation, digital crowds and the limits of self-exposure, social interactions, data ethics and sharing cultures. The installation connects the exhibition space with an established video chat engine. The visitor gets connected to a mass of random people in real time through an algorithmic intervened chat. Data of the interactions is collected and further used to extract facial features and train further automation systems.

1. CONCEPT

Critical Mass is an installation that connects the exhibition space with an established video chat engine, where visitors can have gestural interactions through video live stream media with random people connected through the internet. The video chat engine has been active since 2009 and has been pioneer in what concerns modern dating platforms. The installation exposes both the connected viewers and the visitors and twists the surveillance roles by asking who are the observers and who are the observed? Who are the exposers and the self-exposed? In the background of the installation a real-time engine stores visual data and performs facial recognition and analysis.

Critical mass is a concept used in Social Anthropology and Social Dynamics, which refers to the moment when a certain behaviour is adopted by a considerable number of members from a social group or specific culture. It refers to the multiplicity of social agents who are necessary in order for a collective change to happen. It may also refer to a social stage which is observed when a certain behavior gets accepted and established.

This phenomenon is especially visible in public spaces where crowds gather and propagate certain behaviours. For instance, if someone in the crowd starts expressing an aggressive behaviour, it will be a matter of time before a considerable amount adopts the same behavioural patterns, thus reaching the critical mass, a moment when the same behaviour can be observed in a more homogenous distribution.

The installation explores how this phenomenon also takes place in the digital space, where the individuals are not bound anymore to the others through the notion of space as a physical constrain, but are bound to each other by matters of culture, codes and by sharing the same channels and needs for communication.

The work uses the feed from an existing online chat, which allows people to remotely connect randomly to others who also use the video chat. Originally this platform was launched around 2009 and, until recent months, the platform had not changed its interface much and had remained as a non-commercial and obscure platform. The platform featured, over the past years, image recognition algorithms to filter out inappropriate content and hinder the participation of under-aged audiences and avoid the overload of sexual content. Currently there are a couple of domains which are doubling or mirroring the concept of the platform and moving from a flash-based technology to a WebRTC architecture, which allows to remotely establish video and sound streaming nodes through the web. There is little information behind them, in relation to their providers and what the end purposes behind providing such "service" may be.

Through the installation, it is not only the connected viewers on the remote nodes who get somehow transgressed but also the visitors of the exhibition who's faces get tracked and collected in a database which is being used for training other algorithms with hidden purposes.

This transgression is somehow fictional because I don't really have yet a purpose in collecting all this data and conducting facial recognition and analysis as well as keeping the raw data of the visitors. Nevertheless, the intention is to maintain the tension in the fact that I am doing it and that somehow this process of surveillance, recording and data collection is visible to the visitor, and that somebody is being somewhat cynical on the process and not facing any further immediate consequences.

In "Crowds and Power", Elias Canetti has developed ideas concerning crowds and the mirroring and propagation phenomena in crowd behaviours, arguing that it is out of the need of transcending the individual, that crowds are built and self-sustained: "it is only in a crowd that *one* can become free of this fear of being touched. That is the only situation in which the fear changes into its opposite. The crowd *she* needs is the dense crowd, in which body is pressed to body; a crowd, too, whose psychical constitution is also dense, or compact, so that *she* no longer notices who it is that presses against *her*. As soon as *one* has surrendered *herself* to the crowd, *she* ceases to fear its touch. Ideally, all are equal there; no distinctions count, not even that of sex."

2. TECHNICAL DESCRIPTION

The installation consists of a set of two screens. In one screen, a generated portrait mosaic is built alternating with the feed from the webcam recording the faces of the visitors in the exhibition space, and the video feed from the online chat. In the other, a visual summary of the extracted faces is built and displayed in real time, as well as textual data concerning average gender, average age and average sexual exposure of the whole set of tracked subjects during the exhibition. The system is programmed using Open Frameworks, a headless browsing agent for Chrome, and Open CV-based algorithms for face recognition and analysis. Obscurely, a data base is collected in a continuous base and used for further analysis and system training.

2.1. Chat Engine Intervention

Fig. 1. Photography of the installation *Critical Mass* exhibited in Summer 2018 at xCoAx, Centro Arte Complutense, Museo del Traje, Madrid.
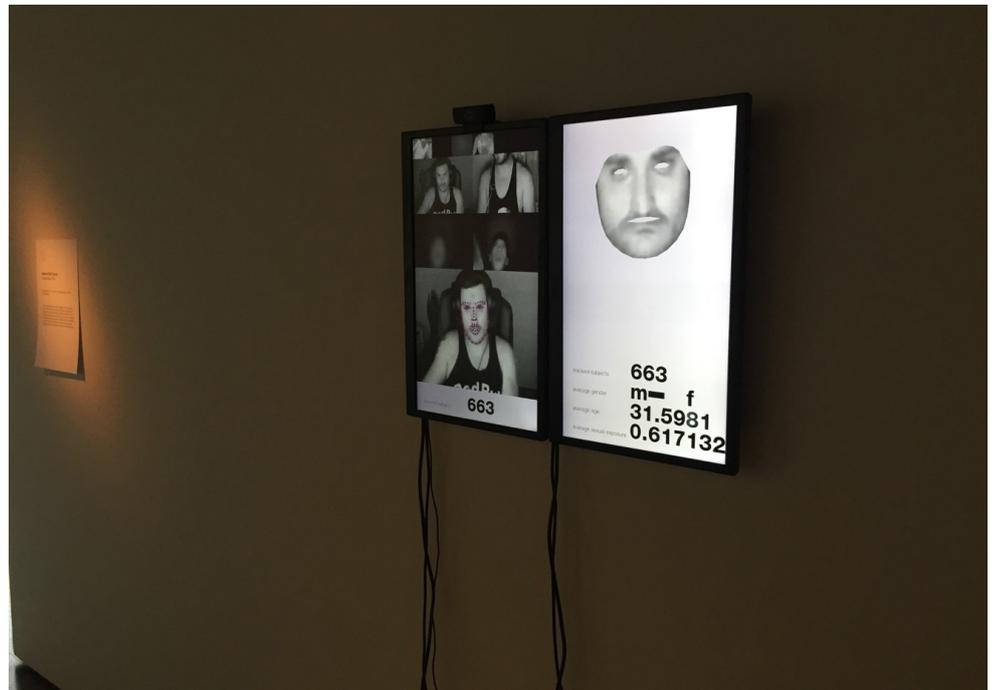
The existing video chat engine is intervened in order to make it possible to access several chat instances at the same time as well as to avoid the banning of the installation and allow to permanently be connecting to it. The viewers on the end nodes

of the chats are informed about their participation in the installation. The information and data retrieved is exclusively used for artistic purposes and it is handled with precautions to ensure data protection and privacy. The algorithms behind the chat engine intervention are written on Python and JavaScript. Additionally, a Chrome Extension Script has been written in order to allow headless web manipulations of the chat instances.

2.2. Media

In the following links you can take a look at the video documentation from the installation Critical Mass as it was exhibited at Centre Pasquart, Biel, Switzerland 2017.

Fig. 2. Video from *Critical Mass* 2017. (https://vimeo.com/224633095)

2.3. Note on privacy

To avoid legal enquires the name of the chat engine will not be revealed to the audience. However, the connected viewers on the other end of the engine are made aware of their participation in the installation upon the beginning of their connections.

References:

Canetti, Elias. Crowds and power. New York: Seabury Press, 1978. Print.

Lipovetsky, Gilles. L'ère du vide: essais sur l'individualisme contemporain. Paris: Gallimard, 1983. Print.

Web Page from the Project.

Github repository.