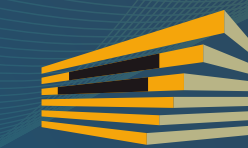


Software for automated detection of violent scenes



ULPGC
Universidad de
Las Palmas de
Gran Canaria

**Fundación
Parque Científico
Tecnológico**



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Resultados de Investigación



TYPE OF R+D RESULT

New technology
[**New product**]
New service
New knowledge or skill



COMMERCIAL MATURITY LEVEL

Model or conceptual idea
Proof of concept (design)
[**Validated in a controlled
environment**]
Validated in a real environment
Successfully implanted



PROTECTION LEVEL

Non- applicable
Patent
[**Software**]
Know - how
Utility model

Description of the solution. Problem solved

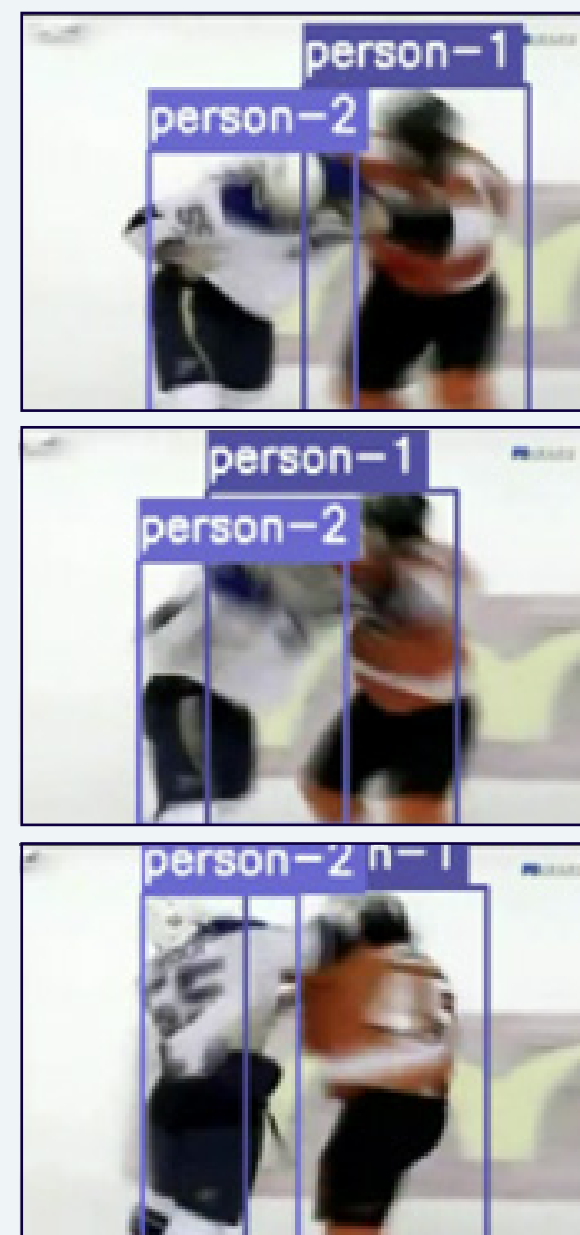
Monitoring environments that may suffer violent acts or needing security is a common activity for security forces, especially in public spaces. Video monitoring implies observing a scene and detecting abnormal behaviours. Among these types of behaviours those related to violence stand out.

In this sense, traditional surveillance methods still require from human component. This could be ineffective due to two reasons: possible high costs derived from paying staff in charge of video surveillance and the risk of human error caused by distractions produced by tiredness.

In latest years, artificial intelligence has developed several techniques targeting to detection of abnormal behaviour by closed circuit video surveillance cameras. However, even when human component is needed to confirm possible alerts generated by software, human tasks may be easier to carry out. This way, the present solution is a technique developed by a software for automated detection of violent scenes. Such software is implemented in a conventional video surveillance camera and uses advanced deep learning techniques that are fused with algorithms for monitoring people in real time.

This solution is, thus, intended to provide an answer to current society's needs: real time detection of violent scenes in the streets, which would provide an appropriate and quick response; as well as managing and restricting violent or inappropriate content for broadcast, especially for children, by parental control.

Here are some images used for detecting violent acts:



Fields of commercial application

This solution is specially targeted to sectors related to citizen security, both public and private sectors. Therefore, the following sectors can be identified:

- Manufacturers of security systems.
- Security companies and law enforcement agents.
- Insurance companies.

In addition to this, this solution can be applied to audiovisual sector; particularly, audiovisual technicians working in parental control and definition and control of violent scenes may find useful this solution.

Market opportunity

Video surveillance world market reached 19,000 million dollars in 2018 and it is expected to reach 33,600 million by 2026, with a compound annual rate of 6.8% in the projection period. However, artificial intelligence applications and deep learning algorithms are likely to boost growth in this market.

According to an article published by Carnegie Endowment for the Organization for World Peace in 2019, 75 out of 176 countries are actively benefiting from artificial intelligence capacities for surveillance, including facial recognition systems, intelligent cities and many other. This data reflects that is likely that increasing initiatives and development of intelligent cities boost usage of surveillance systems and facial recognition.

Competitive advantage

Scientific community has developed numerous studies in detection of violence field. Our research team's approach uses the latest techniques of the state of art to surveillance and monitoring and it is able to infer the violent/non-violent behaviour of a scene according to the actors taking part in it.

Unlike other state of art techniques, this solution does not process the whole scene to train a machine, but it focuses only on the area of interest, that is the position of human beings in the scene. So, the main advantage offered by this solution compared to existing ones is that it allows to detect the violent act (or crime) automatically and in real time, making possible to turn the mechanisms to deal with the problem on and reducing the time for reaction.

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