



# גיאומטריה פורנזית השוואתית

## Comparative Forensic Geometry

## **Comparative Forensic Geometry**

**IPSC** was established after my retirement from the Israel National Police about 10 years ago and focuses on intelligence & cyber.

Some unique areas in which we specialize, among other areas of intelligence and cyber, are the detection of **Video Forgeries, Forensic Investigations** and **Geometric Comparison**.

The Forensic Investigation is intended to verify through a Geometric Comparison whether the person arrested by the police is the figure captured by the security camera at the scene.

In recent years, video forgeries have become a weapon and a tool for nemesis and I, as the former Secretary General of *CYBERPOL* and the Ret. Director of *INTERPOL* of the Israel National Police, try to prove the forgeries in those videos that are uploaded to social networks.

The forensic investigation is done by a Certified Expert who is a Digital Forensic Investigator and Certified Expert Witness by the Ministry of Justice of the state of Israel.

The method is taken from **SWGDE**, the Scientific Working Group on Digital Evidence which is composed of approved members from all levels of government, legal community, private industry, and academia involved in the digital and multimedia forensic profession including FBI whose representatives head the group.

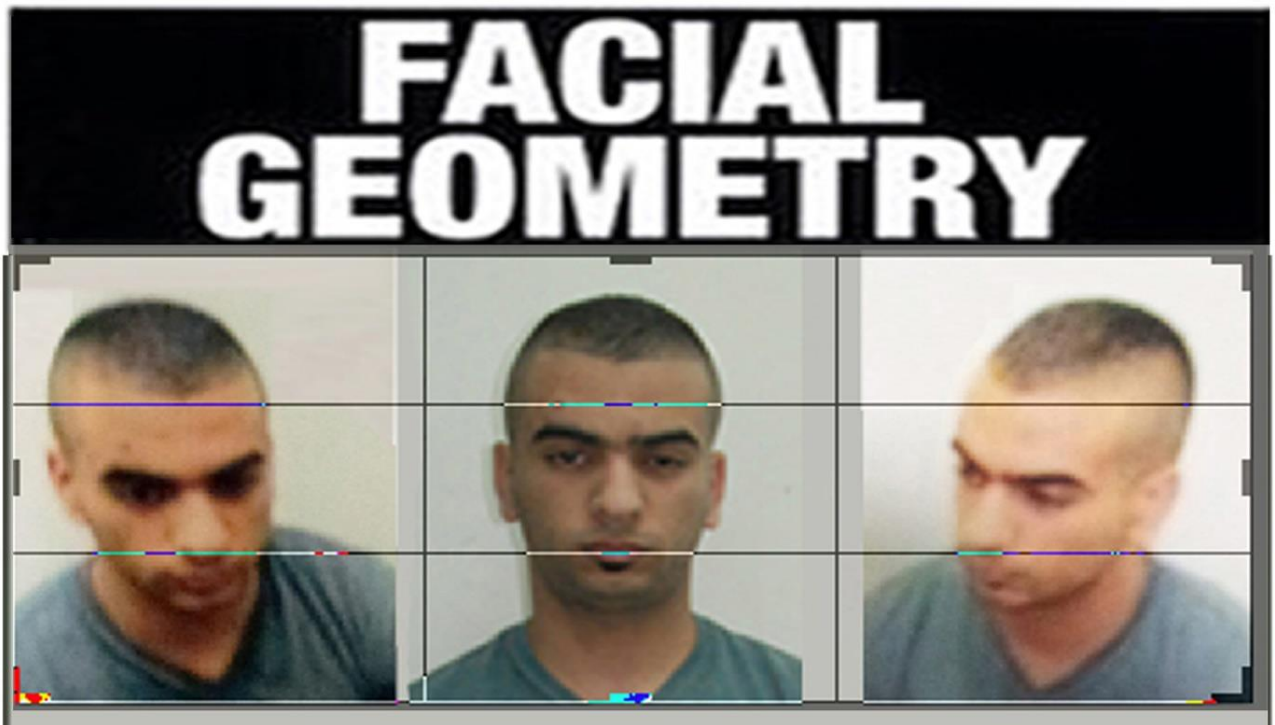
When we analysis a video, we can find if it is a fake video which was made according to the anti-forensic methods, using video editing and computer animation programs, deletion of Meta Data, adding fake Meta Data and hiding edit marks.

The unique fields of **Forensic Investigation** and **Geometric Comparison** make **IPSC** a special agency with few competitors worldwide.

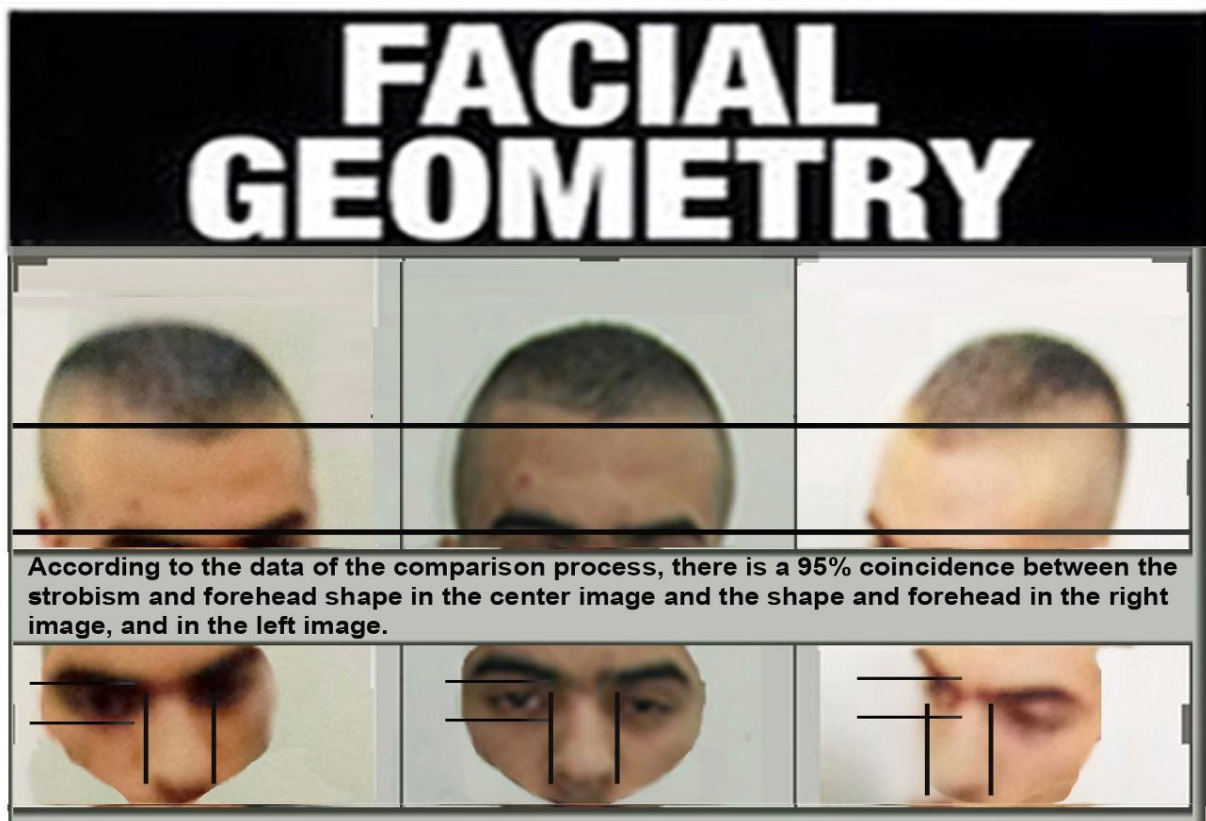
The following are examples of Geometric Comparison cases.

# Case 1

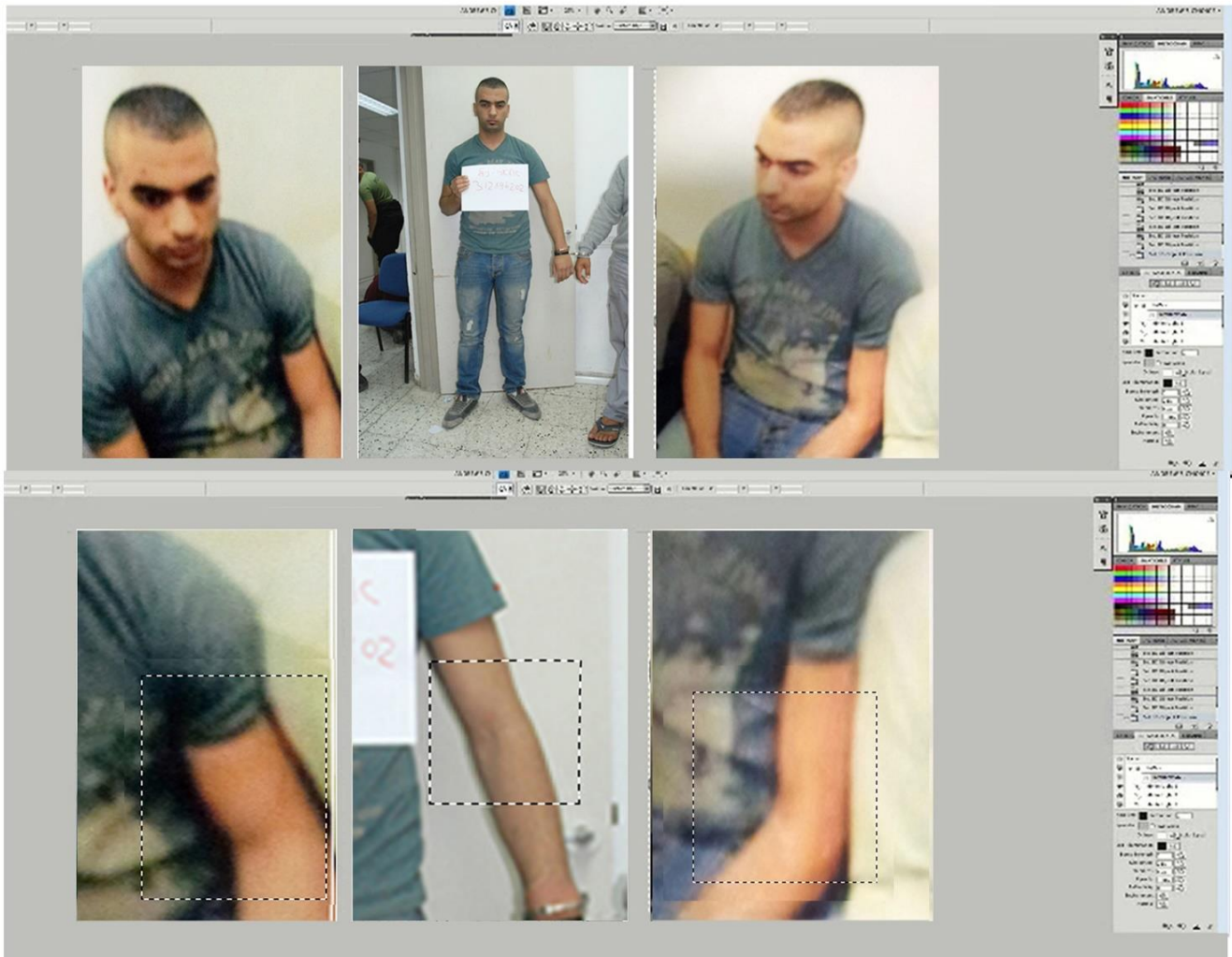
## Geometric Comparison: Forehead, eyes, nose & hand



**A test we performed with the software *FACIAL GEOMETRY* found a 95% match between the figure in the center (photo was taken by the police during the arrest) and the figures from the Internet on the right and left pictures (from the demonstration).**



A test we performed with the software *FACIAL GEOMETRY*, a 95% match was found between the forehead, eyes shape and nose shape of the figure in the center (taken by the police during the arrest) and the figures on the right and left (from the Internet).



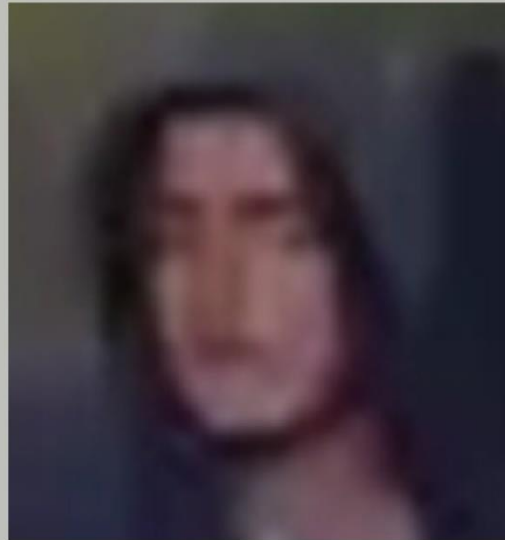
In a test we performed with the software *FACIAL GEOMETRY*, a 95% match was found between the right hand of the figure in the center (taken by the police during the arrest) and the right hand of the figures on the sides (from the Internet, photos of a demonstration).

# Case 2

## Geometric Comparison: Chin, eyes , nose & forehead



# Comparative geometry of faces and body parts



**Following an examination conducted, it emerges that:  
There is a 95% probability that the figure appearing in the image on the right is a figure that appears in the picture on the left.**

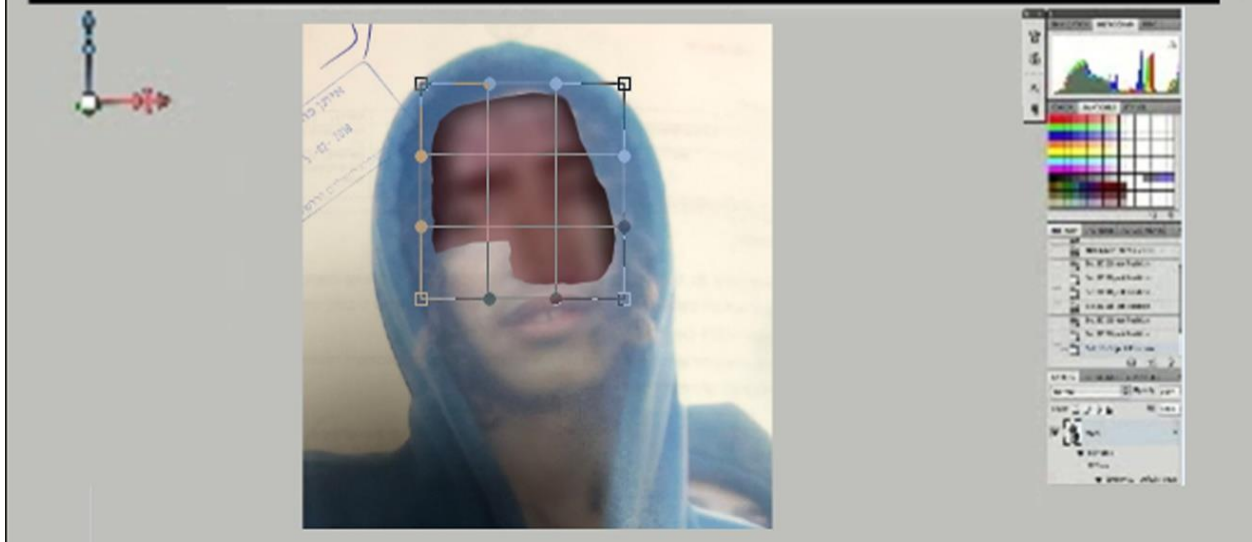
***Image A:* A comparison we made using Forensic software *FACIAL GEOMETRY* shows that there is a 95% match that the image in the right (photo from a security camera) is the same as the image in the left (photo was taken by the police).**

# Comparative geometry of objects



**Image B:** There is a 95% match between the parts and the shape of the chin to the figure in Image A.

# Comparative geometry of objects

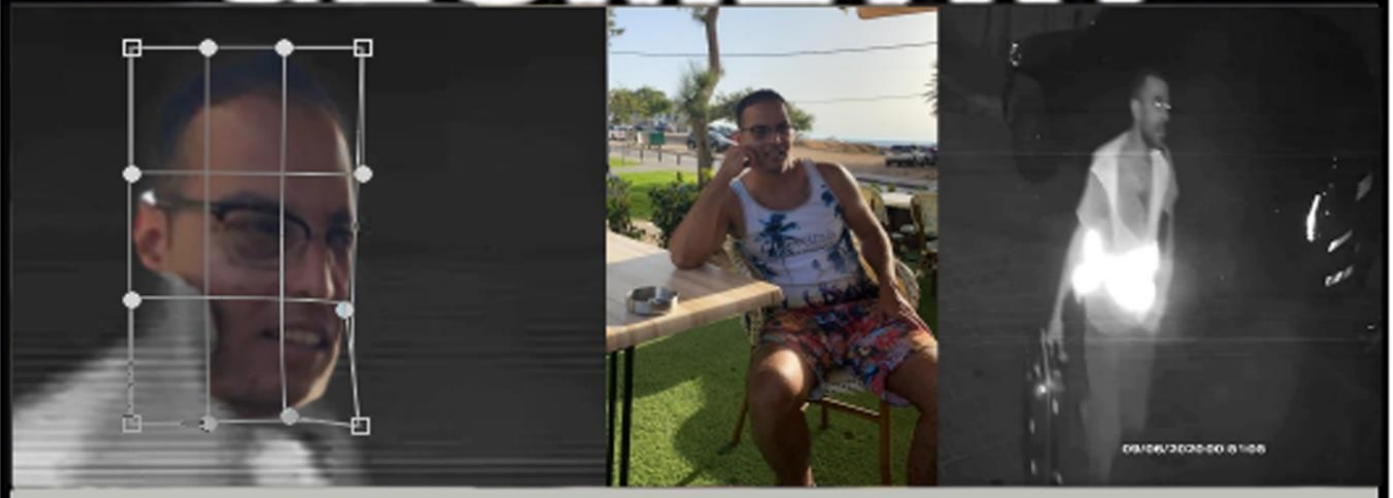


**Image C:** There is a 95% match between the parts and the forms of the forehead, the eyes, and the nose to the figure in Image A.

# Case 3

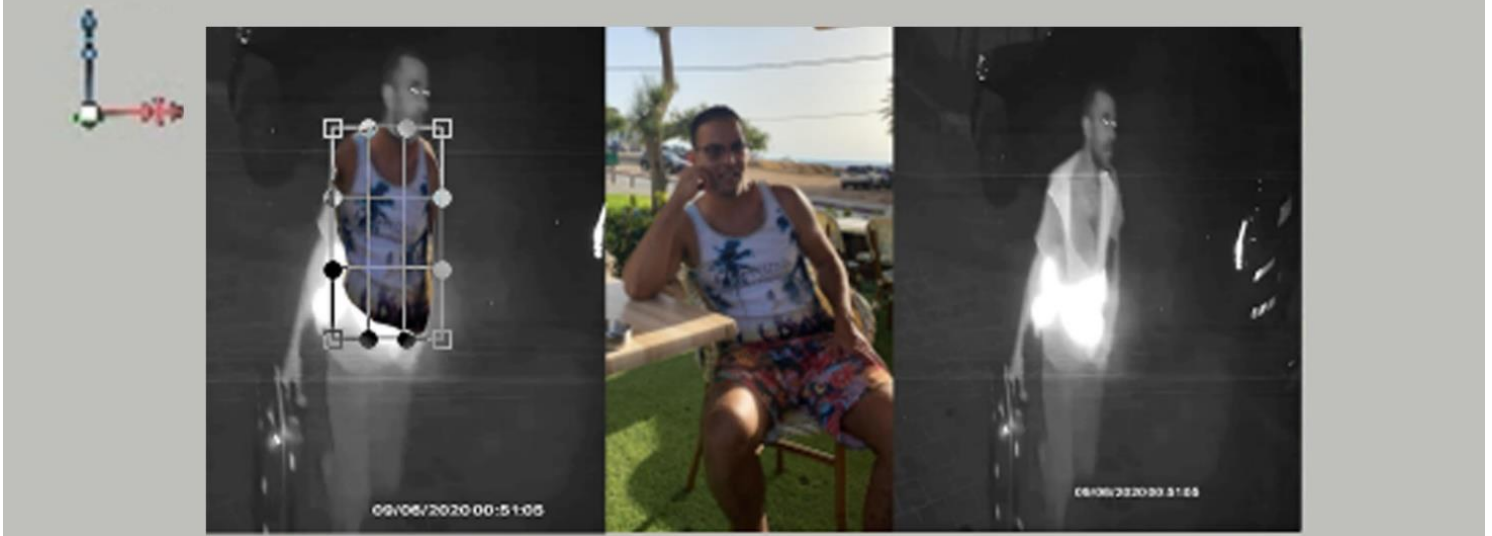
## Geometric Comparison: head, facial parts & chest

# FACIAL GEOMETRY



A comparison we made using Forensic software *FACIAL GEOMETRY* shows that there is a 95% match between the facial parts of the figure on the right (photo from a security camera) and the facial parts of the figure in the center (the photo in the center was given to the police by the family). The result of the comparison can be seen in the left image.

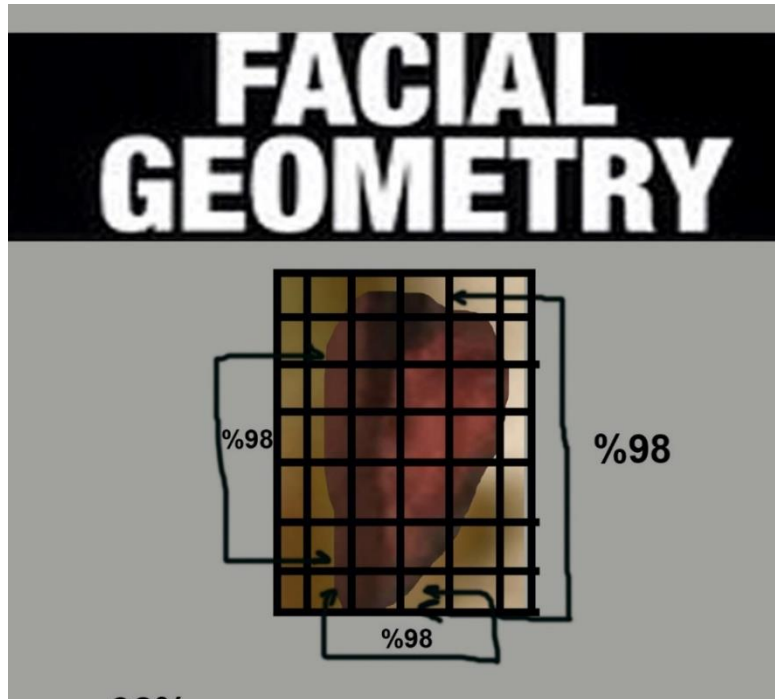
# Comparative geometry of objects



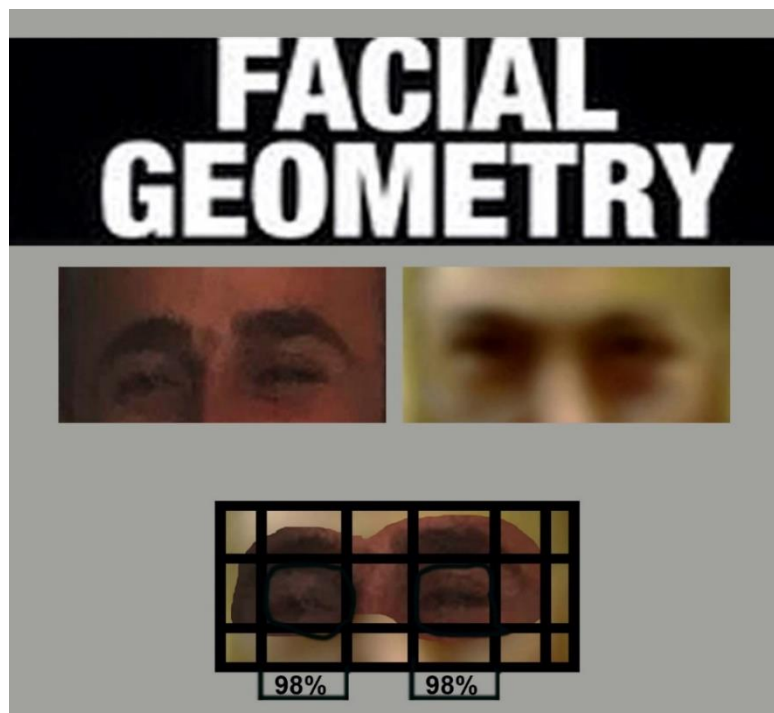
According to the results of the comparison of the chest and body's parts using *FACIAL GEOMETRY* software, there is a 90% probability that the figure in the right (photo from a security camera) is the figure in the center (photo was given by the family). The result of the comparison can be seen in the left image.

# Case 4

## Geometric Comparison: Ears, eyes & lips

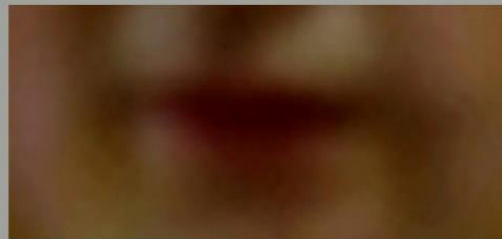


The match between the shape of the ears is 98%



The match between the shape of eyes is 98%

# FACIAL GEOMETRY



**The match between the shape of lips is 98%**