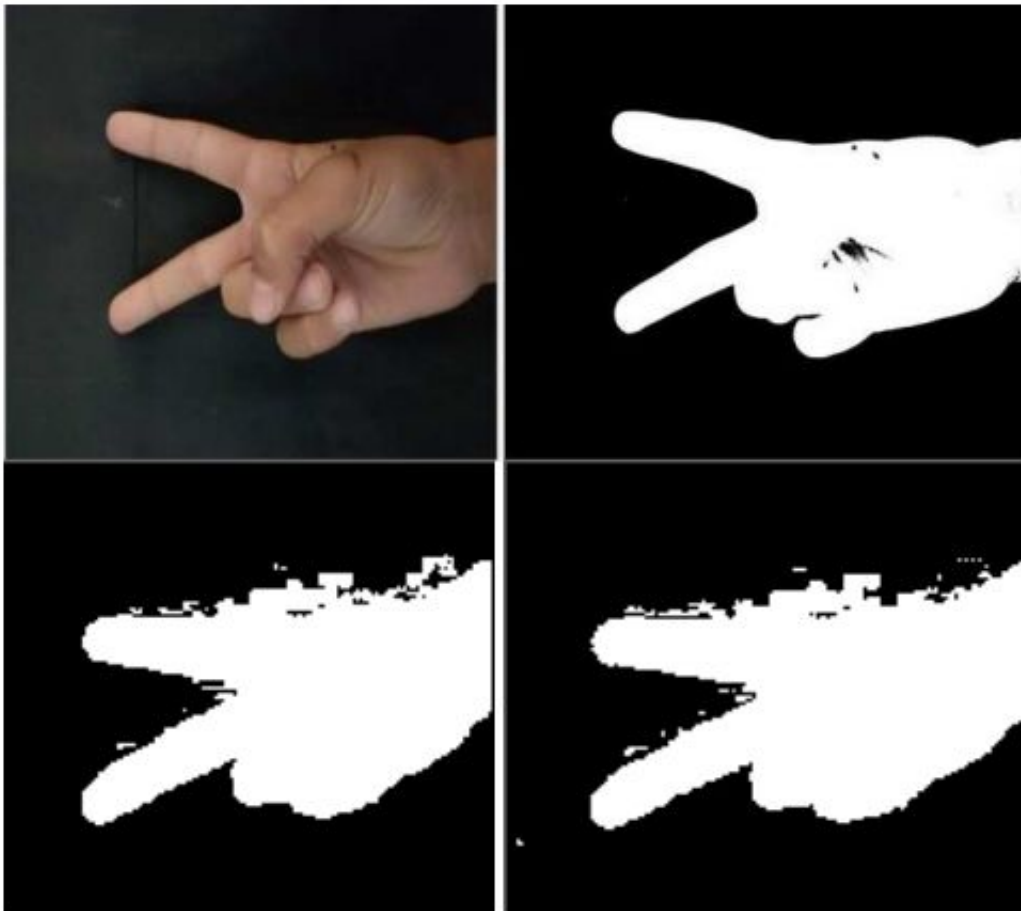


Researchers create a new database for V sign biometric

March 10 2016, by Nancy Owano



Segmentation results: (up-left) Original; (up-right) Otsu; (downleft) K-means clustering/Euclidean; (down-right) K-means clustering. Credit: [arXiv:1602.08325 \[cs.CV\]](https://arxiv.org/abs/1602.08325)

Videos of beheadings. The victim can be seen, kneeling, ready to die. The face and body of the man standing with knife poised is covered; his identity cannot be seen. A research team from Jordan have completed a study of how a terrorist might be identified, through his hand's sign of Victory, the classic V.

This sign, said the authors, might be the only information available about him. They created a new database for the victory sign, and they investigated some simple approaches to identify persons from those images.

They discussed their work in their paper, "Victory Sign Biometric for Terrorists Identification," which is on the arXiv.

While evidence can be sought in hand geometry, the authors recognized that it is a challenge in this instance, as not the whole hand can be seen, only two fingers, the index and the middle fingers.

To create their database they used a mobile phone camera, imaging the victory signs of 50 different persons over two sessions. The images were taken in two different sessions with five images for each session. The total number of images was 500. "All the images of the hand were upright with some rotation allowed around -45 to 45 degrees. The mobile phone camera was upright when the images were taken, and that is why the hands appear horizontal in images. All hand images were in the foreground against a black background to ease hand segmentation."

Simple measurements for the fingers in addition to the Hu Moments for areas of the fingers were used. Their victory sign [hand](#) image database carries [images](#) of 50 users, male and female. They said experimental results using the KNN classifier were encouraging for most of the recorded persons; with about 40 percent to 93 percent total identification accuracy, depending on features, distance metric and K used.

Fundamentally, *Ubergizmo* readers are reminded by Tyler Lee that the researchers are using machine learning to help make identifications based on the 'V' signs made.

Lee said, "different people create 'V' signs differently, and the researchers claim that they are able to point out who is who based on finger size and the angle between [fingers](#)."

Their effort "at least" will provide information as to whether or not the terrorist appears in videos frequently, said Lee. "So far their technique has yielded 90 percent accuracy, but unfortunately their data set is pretty small so as to how effective it will be in the field remains to be seen."

A comment from *MIT Technology Review*: "...this is curious work that reveals how the pressures to identify nefarious individuals in the 21st century are leading to ever more inventive biometric [techniques](#)."

More information: Victory Sign Biometric for Terrorists Identification, arXiv:1602.08325 [cs.CV] arxiv.org/abs/1602.08325

Abstract

Covering the face and all body parts, sometimes the only evidence to identify a person is their hand geometry, and not the whole hand- only two fingers (the index and the middle fingers) while showing the victory sign, as seen in many terrorists videos. This paper investigates for the first time a new way to identify persons, particularly (terrorists) from their victory sign. We have created a new database in this regard using a mobile phone camera, imaging the victory signs of 50 different persons over two sessions. Simple measurements for the fingers, in addition to the Hu Moments for the areas of the fingers were used to extract the geometric features of the shown part of the hand shown after segmentation. The experimental results using the KNN classifier were encouraging for most of the recorded persons; with about 40% to 93%

total identification accuracy, depending on the features, distance metric and K used.

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