VISUAL ANALYTICS FOR COMMAND, CONTROL, AND INTEROPERABILITY ENVIRONMENTS
A U.S. Department of Homeland Security Center of Excellence

VACCINE

vBOLO (Video Be on the Lookout)

PRODUCT

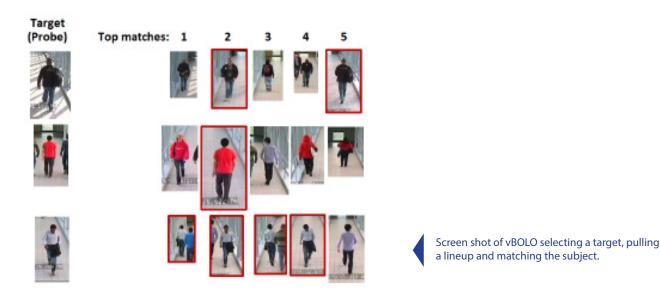## What vBOLO Does

vBOLO, which stands for Video Be on the Lookout, is a video detection technology that enhances current video surveillance by identifying features of a person committing a crime. The tool then uses those features to create a lineup of subjects matching those identifying features. Ultimately, it can re-identify persons of interest who reappear in the surveillance system, in a lineup of 10, at 90% accuracy.

Screen shot of vBOLO selecting a target, pulling a lineup and matching the subject.

How it Works

The method uses computer vision and image processing techniques to create features of the subject. Humans are continuously detected and monitored to determine when the subject reappears in the video. This is done by extracting features, which include color, texture, face and motion information, from each candidate and matching it to the subject. The result of the matching process is a constantly updated list of likely matches to the subjects.

Why it is Useful

In many cases, a subject will return to the scene of his/her crime days or hours later, at which point there is an opportunity to re-identify the person of interest, sound an alarm and apprehend the individual.

vBOLO provides that opportunity by re-identifying persons of interest, flags that the subject has reappeared and where they are located. Developers hope to improve the accuracy rate to 95% in a lineup of five by adding high-resolution video, motion features, improved body features, facial analysis and subject attributes (items carried or specific type of clothing worn, such as a backpack or a skateboard).

Where it is Being Used

vBOLO was developed for the Greater Cleveland Regional Transit Authority, where it has been tested.

▶ "The results to date have been very impressive and I feel that continuing the development of these techniques will have real impact in how we are able to use our surveillance system. This could be easily extended to other transit systems and law enforcement applications throughout the country."

— John P. Joyce, Chief of Police, Director of Security
Greater Cleveland Regional Transit Authority

Contact Us

Want to find out how VACCINE's research can help your organization? Email **vaccine@purdue.edu** or visit **www.visualanalytics-CCI.org**.

PURDUE
U N I V E R S I T Y ®

VISUAL ANALYTICS FOR COMMAND, CONTROL, AND INTEROPERABILITY ENVIRONMENTS
A U.S. Department of Homeland Security Center of Excellence

VACCINE