

# The VBOLO Data set Summary

## General Description

Here, we present a new dataset for the ReID problem, known as the 'Virtual Be-On-the-LookOut' (VBOLO) dataset. This dataset was collected from a camera network operated by the Greater Cleveland Regional Transportation Authority.

The data was collected by students and faculty from Notre Dame, Rensselaer, Purdue, and Columbia. All data was collected under the terms of a human subjects IRB data collection protocol and all actors in the dataset signed appropriate consent forms at each collection session. The head of GCRTA has ruled that this data is a public record.

The scenario motivating this dataset is an updated version of the "Be on the Lookout" (BOLO) report commonly issued to law enforcement personnel at the start of their shifts. BOLO reports often contain a suspect face image to aid the officer's prospects for apprehension. The electronic counterpart of this is an intelligent camera network that has a number of BOLO face images and is tasked to detect and report those persons anywhere in the network, to a desired degree of accuracy. Suspects intending to evade apprehension could make intentional attempts to circumvent and confuse the ReID system's matching process. The VBOLO dataset tries to simulate these circumstances by using a small set of known individuals, whom we call "actors", moving in and out of transit system facilities while surrounded by many unknown pedestrians, who we call "distractors". Each time a known actor walks through a camera system (an "appearance"), they are wearing different clothing.

## Collection Details

Data for the VBOLO Dataset was collected over the course of three separate sessions at the GCRTA:

- session 1: August 19, 2014;
- session 2: October 16-17, 2014;
- session 3: July 15, 2015.

The data from all sessions were collected at various choke points within GCRTA facilities such as tunnels, bridges, and hallways. These capture environments include different illumination, backgrounds, frame rates, resolutions, and pedestrian poses. The visual differences between each camera can be seen in Figure [\ref{fig:camera\\_views}](#).

The October 2014 collection phase utilized a total of seven known actors, while the July 2015 collection utilized nine known actors, with three actors in common between the two. Figure [\ref{fig:actors}](#) shows an example of each known actor for both collection phases.

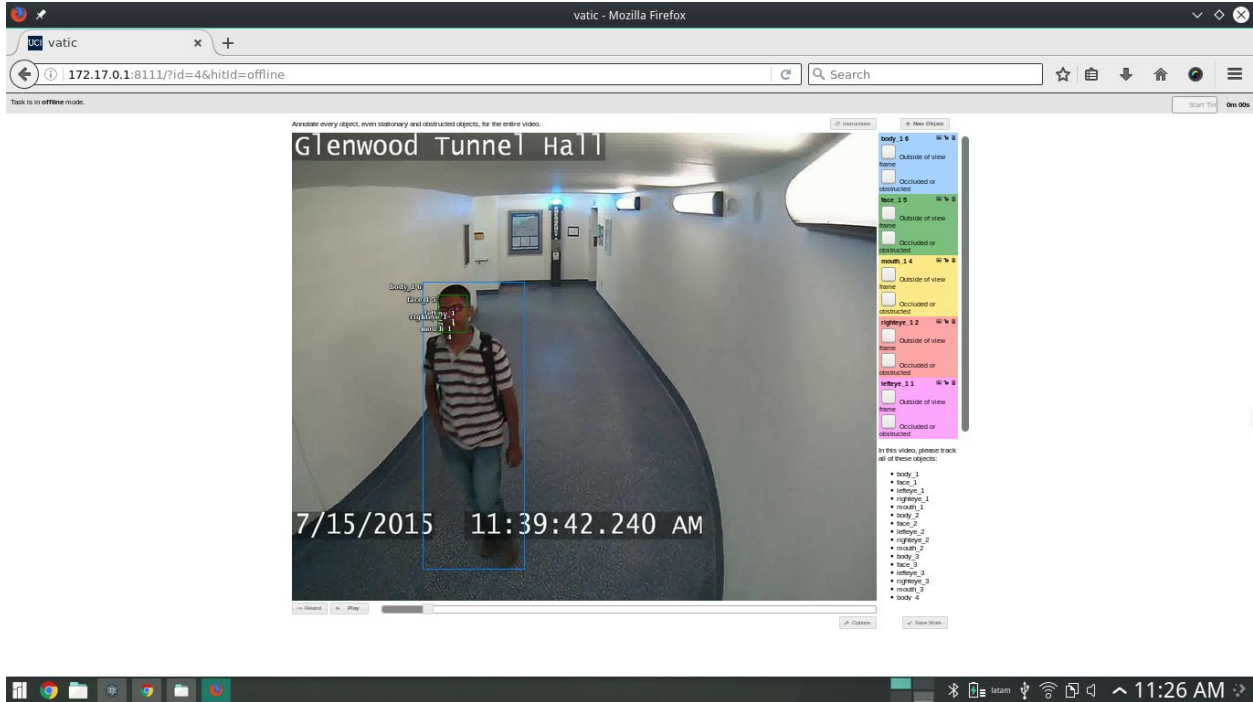
Location name and details are shown in the table below.

	name	With 'actors' ?&#of 'actors'	Resolution
Session 1	airport fire doors	n	
	airport platform doors	n	
	e51 westbound	n	
	Turnstile	n	
	rotunda kiosk	n	
	walkway1	n	
	walkway2	n	
	west park tunnel	y	
Session 2	brookpark_buswaiting	y	
	brookpark_tunnel1	y	
	brookpark_tunnel2	y	
	puritas_tunnel	n	
	triskett_bridge	y	
	triskett_main_entrance_door	y	
	w117_lobby_west	n	
	w117_tunnel	n	
	westpark_tunnel	n	
Session 3	Brookpark	y/9	728x480 /30fps
	Glenwood	y/9	1280x1024/ 30fps

### Annotation

We are releasing annotated video frames from two stations collecting in Session 3. Details for annotation is included below.

**software:Vatic**



which will write the file "output.txt" where each line contains one annotation. Each line contains 10+ columns, separated by spaces. The definition of these columns are:

- 1 Track ID. All rows with the same ID belong to the same path.
- 2 xmin. The top left x-coordinate of the bounding box.
- 3 ymin. The top left y-coordinate of the bounding box.
- 4 xmax. The bottom right x-coordinate of the bounding box.
- 5 ymax. The bottom right y-coordinate of the bounding box.
- 6 frame. The frame that this annotation represents.
- 7 lost. If 1, the annotation is outside of the view screen.
- 8 occluded. If 1, the annotation is occluded.
- 9 generated. If 1, the annotation was automatically interpolated.
- 10 label. The label for this annotation, enclosed in quotation marks.
- 11+ attributes. Each column after this is an attribute.

12 Which appearance

Naming rule(for the script):

- 1 frame. The frame that this annotation represents.

- 2 lost. If 1, the annotation is outside of the view screen.
- 3 occluded. If 1, the annotation is occluded.
- 4 Track ID. All rows with the same ID belong to the same path.
- 5 xmin. The top left x-coordinate of the bounding box.
- 6 ymin. The top left y-coordinate of the bounding box.
- 7 xmax. The bottom right x-coordinate of the bounding box.(w)
- 8 ymax. The bottom right y-coordinate of the bounding box.(h)
- 9 generated. If 1, the annotation was automatically interpolated.
  
- 10 label. The label for this annotation, enclosed in quotation marks.

## References

Data from session 1 and 2 was used in the following papers, please kindly cite if you working with this dataset.

```
@inproceedings{li2016toward,  
  title={Toward facial re-identification: Experiments with data from an operational surveillance camera plant},  
  author={Li, Pei and Brogan, Joel and Flynn, Patrick J},  
  booktitle={2016 IEEE 8th International Conference on Biometrics Theory, Applications and Systems (BTAS)},  
  pages={1--8},  
  year={2016},  
  organization={IEEE}  
}
```

```
@inproceedings{li2017learning,  
  title={Learning face similarity for re-identification from real surveillance video: A deep metric solution},  
  author={Li, Pei and Prieto, Maria Loreto and Flynn, Patrick J and Mery, Domingo},  
  booktitle={2017 IEEE International Joint Conference on Biometrics (IJCB)},  
  pages={243--252},  
  year={2017},  
  organization={IEEE}  
}
```