

NEW TECHNOLOGY IN OBLIQUE IMAGING: OBLIVISION

Homeland security concerns have increased interest in first (and other) responders "knowing what to expect." That's brought a wave of interest in systems that make use of oblique images. I've reported on Pictometry's offerings, and those from Visual Intelligence. I recently received information about another offering in this space with its own twist on the technology.



The system, called Oblivision, is from [Idan Computers Ltd.](#), based in Israel. The solution combines ordinary orthophotos and digital terrain models with oblique images. Once a spot is selected (by clicking on the orthophoto, supplying coordinates, an address etc), the system provides views of the spot from all directions. Analysis and measuring can be done on the individual oblique photos. Heights of poles can be measured, or the length of a guard rail, for example.

The distinguishing characteristic of this system? There is no need to know the camera position while acquiring the oblique images. Moreover, any camera can be used, from consumer grade on up. Oblivision clients include the Israeli police, army, municipalities, and architects. While much of the system's use in Israel focuses on security, the company website notes that the system has been used in highway construction projects to check for changes over time, and in mining activities to keep an inventory. In these situations new oblique photos are taken at regular intervals, every few days or weeks, as needed. The imagery is highly compressed so that images covering an area can be cut to a CD to be carried in a vehicle or by a soldier on foot.

I asked Joseph Freund, Idan's CEO how the system works. "Basically, what we are doing is 'solving' each oblique photo in a very simple way," he explained. "We need to identify four points both in the oblique and in the orthophoto. (The same four points.) For each oblique photo we have then an 'OBL' file, a sort of 3D world file. The first two columns are pixels in the oblique photo and the last 3 are the X,Y,Z world coordinates in the orthophoto."



The next step involves the digital terrain model (DTM), typically the same one used to create the orthophoto. (Recall that an orthophoto is basically a photo with the "lumpiness" of the earth subtracted out. The DTM describes "what to subtract out.") Freund explained that using the DTM, "this OBL is then 'solved' to create a JFR file, that includes the transformation matrix for the image. As a byproduct, we get the exact location of the camera. After that, we can click a point in the oblique photo and show it on the orthophoto, and vice versa. And, we can do horizontal and vertical measurements in the oblique photos."

In practice, clients collect their own oblique photos and provide the coordinate pairs to Idan. Idan staff constructs the JFR files and returns them to the client, who can then use the images with the Oblivision software. Some clients license the solution module so they can create their own JFR files, but most use Idan as a service bureau to create the required files.



The client software used to access and analyze the imagery is impressive. One tool I found interesting draws the direction from which the oblique image was taken on the orthophoto. The line colors match the "dot" colors in the images (as in the image above). Another clever tool outlines the area covered by each oblique on the orthophoto, essentially "mapping out" the coverage area. I would imagine that's useful for determining if the appropriate amount of coverage is available for particular areas of interest. The image at left is the "Zofnat Paaneah" school in Jerusalem, built at the beginning of the 20th century.

My sense is that demand for this sort of tool will only increase, so it's valuable to keep an eye on the different technologies that make it possible.

