Exploiting the OSM for Detecting the "Undetectable" Objects in Satellite Imagery

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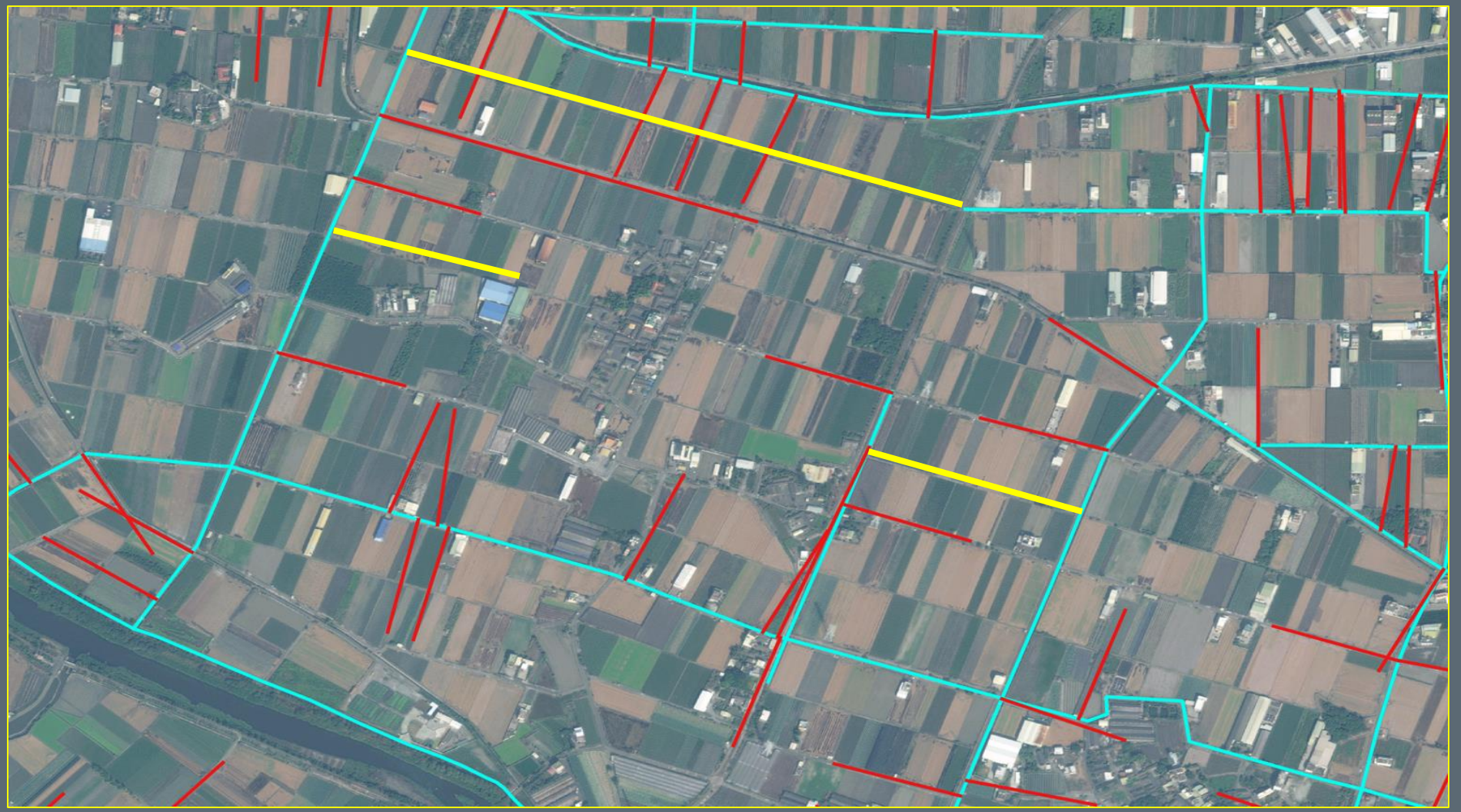
Satellite Image Scene Understanding in Purdue RVL

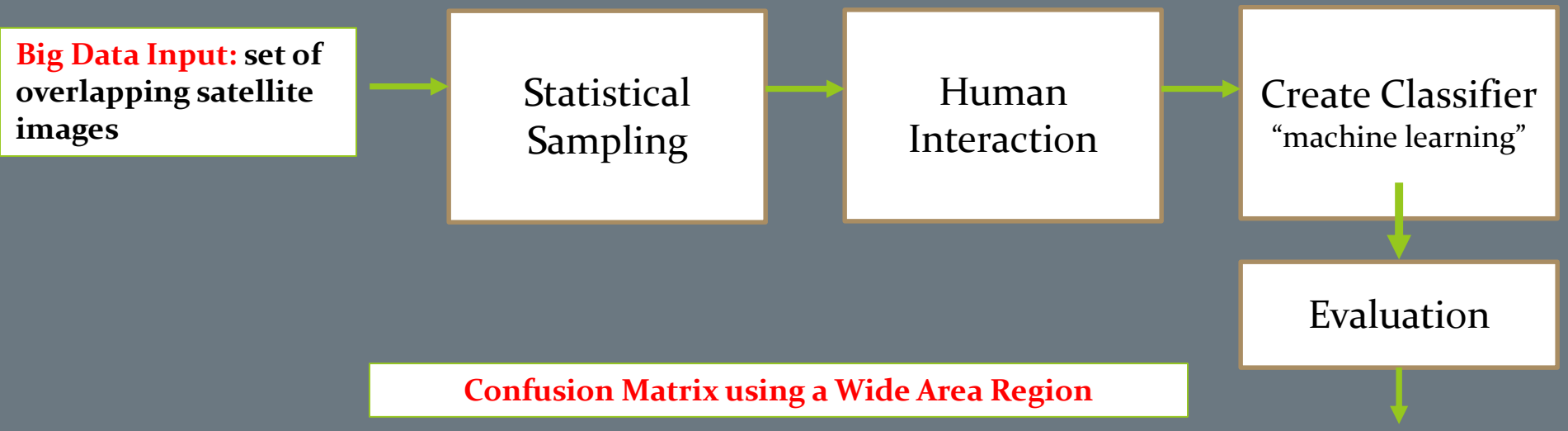
- We can now do the following with our RVL Cloud based system:
  - Recognize objects as small as pedestrian crossings in an area as large as 200,000 sq. km. with only 6 hours of processing on our in-house RVL Cloud (that is fully compatible with the Amazon Cloud)
  - Our OSM based wide-area object detection system can recognize pedestrian crossings with a precision of 89% and recall of 63%.
  - We do wide-area object detection using generic features so that the same framework can be used for different kinds of objects.

Since OSM is the Key, You Need Algorithms for Automatically Extending OSM



Green: OSM roads. Red are detections. Note that yellow lines are not missed detections for Taiwan

A Wide-Area Learning Framework for Scene Labeling in Satellite Images



Confusion Matrix using a Wide Area Region

	ActiveCropField	Soil	Trees	Water	Buildings	Roads
ActiveCropField	67.125	0.0	31.962	0.0	0.0	0.9125
Soil	0.0	99.987	0.0125	0.0	0.0	0.0
Trees	0.125	0.025	99.763	0.0	0.0	0.0875
Water	0.0	0.0	0.0375	99.950	0.0	0.0125
Buildings	0.025	6.487	0.0	0.0125	66.338	27.137
Roads	0.1	0.8625	0.0125	0.0	0.075	98.950

Dealing with the Challenges of Generating the Ground Truth for Evaluating Wide-Area Algorithms