Learn by example

We manually selected two initial set of images: with amber extraction and without it (positive and negative examples).
Totally there were couple of thousands of examples, but with smaller images

Learn by example, 2

We programmed a computer model, and trained it on those initial set of images

Automatic search

It took approximately 60 hours for our model to process all images.We created interactive, online map with all places found

Not quite correct

First version of model misclassified about 20% of all found extraction places:we were corrected by early users of our map. We re-trained our model using new set of initial images (we excluded photos with specific type of deforestation, from our initial training set, which looks similar to amber mining)

Current version

So in our project we created first, most complete interactive map of illegal amber extraction. We did a first reliable estimation of impacted area, too (thousands of hectares)

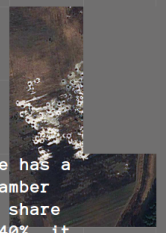
Design, 1

We decided to intermix images of amber extraction with text from our article. Tetris-like images flow with a text of an article and finally got a place on main interactive map on the bottom of page

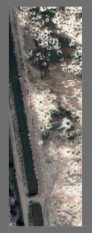
click me

Leprosy of the land

THOUSANDS HECTARES OF LAND TURNED INTO LUNAR LANDSCAPES DUE TO ILLEGAL AMBER MINING. OUR MACHINE MODEL FOUND TRACES OF SUCH ACTIVITY ON SATELLITE IMAGES FOR THE AREA OF 70,000 SQUARE KM.



Illegal extraction of gemstones provide "jobs" to thousands of people who live near such deposits in Volyn, Zhytomyr, and most of all, in Rivne region of a country.

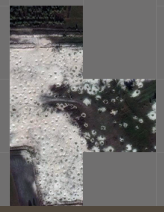


A few decades ago one could hardly imagine how to make profit out of the "solar stone". In the past people could dig up amber in their backyards and burn it in stoves as a fuel for house heating.

Everything changed in 2012-13. The town hotels of Rivnenska oblast have never seen so many Chinese people before. Foreigners brought currency and smuggled the amber back to China. The Chinese buyers paid generously, so the amber mining got mechanized – shovels gave way to power pumps. 2014-2016 became the golden years for amber diggers leading to environmental disaster.

All pictures in this article are the satellite images of amber mining sites. You could click on each image to see the area on the map

Ukraine has a world amber market share of 30-40%, it is from 250 to 350 tons.



Around 50 000 of Ukrainians are engaged in illegal amber mining.