Week 7

Mining Asset Detection (MAD)

Last weeks result

Tree of possibilities - Use cleaned satellite images

General idea…

- Instead of using the Sentinel 2 satellite images use cleaned Google (or other source?) satellite images

What to do…

- Use the cleaned images to train the model again and compare the outputs in terms of how accurate they are

Tree of possibilities - Use cleaned satellite images

Train on this, instead of

this.

Tree of possibilities - Perturbate instead of grid

General idea…

- The final training set is very small (2GB [thanks to jpeg :)])
- So instead of only using the grid images, per Maus polygon, use multiple images perturbed as…
  - From different Zoom levels
  - Different centering in the image

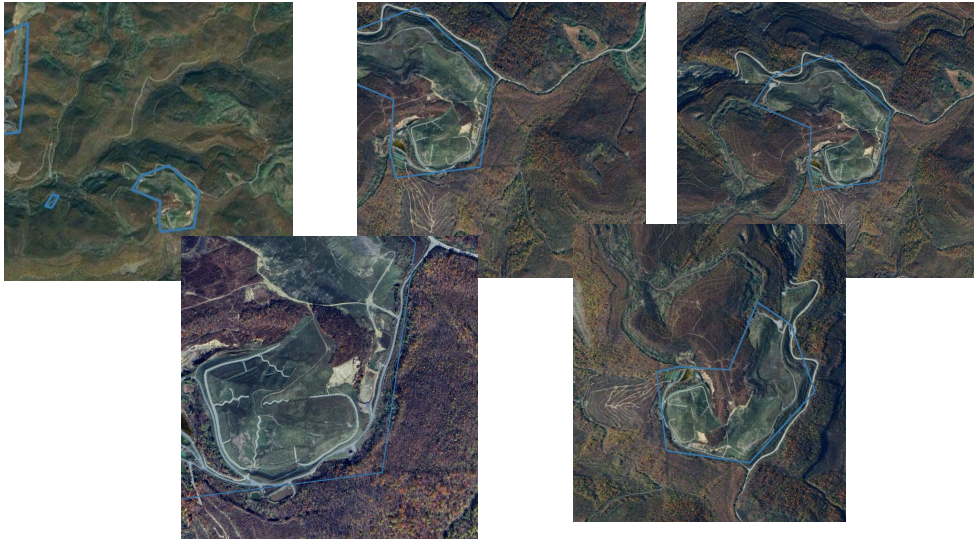
What to do…

- Use this inflated dataset to train the model again and compare the inputs against the baseline

Tree of possibilities - Perturbate instead of grid

Instead of this, train on

this



Tree of possibilities - Models per region

General idea…

- Instead of having a single model for all mines, create different ones for different ecoregions

What to do…

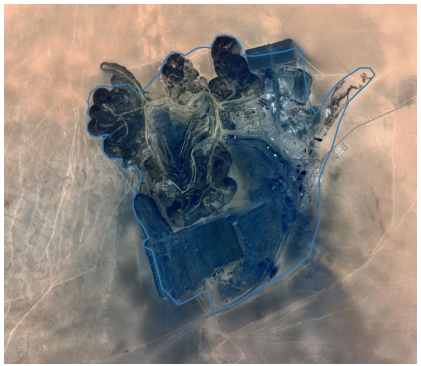
- Difficult to compare to baseline model as the evaluation is mainly done by yolo itself
  - Might take some advanced fiddling to make comparable

Tree of possibilities - Models per region

Use different models for different Ecoregions

Model1

Model2



Model3

Tree of possibilities - Use different bands

General idea…

- Use the multiple bands from the sentinel output to either…
  - Do processing after model inference (to make the output more precise)
  - Use the bands to do the inference (as in train on band dependent jpegs)

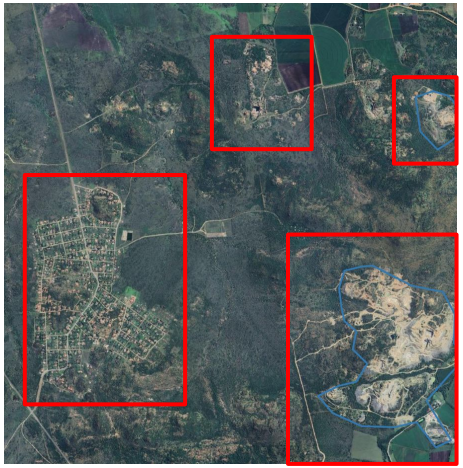
What to do…

- Make the yolo output compatible with the Lasso output to do post inference processing
- Train the model on multiband images (Maybe multiple models for different bands)

Tree of possibilities - Use different bands - Precision

Use Lasso prediction

+ Model output

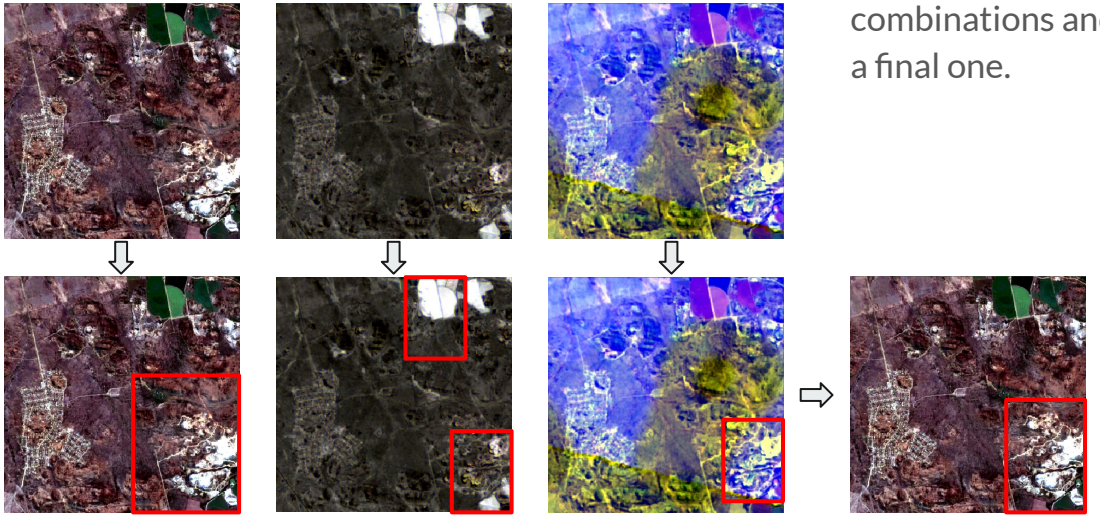


To determine true hits

Tree of possibilities - Use different bands - Inference

RGB

B6, B7, B8 B10, B11, B12



Use different models for different band combinations and then use all predictions to get a final one.

Tree of possibilities - Use labelled mine data

General idea…

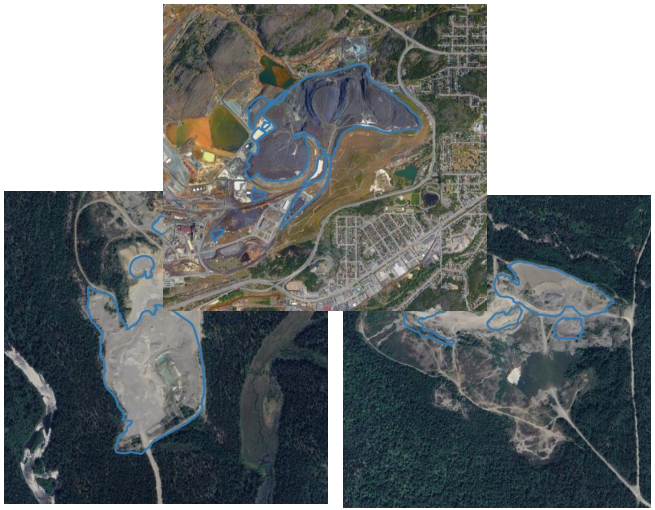
- Use the labelled mine dataset (from Julie) to classify different mines
- Use a more mature model to label what type our images are
    - Use human supervision to check if the labels seem reasonable

What to do…

- Use this synthesized dataset to not only train on mine existence but also mine types

Tree of possibilities - Use labelled mine data

Cobalt mines



Use labelled data (cobalt mines) to label our data

With the labelled data train specialised models for each labelling type.

Final output

What should the model be utilised for?

- Integration with something like QGIS? (Select AOI and see labelled mines?)
- One large global run with a dataset of findings?
- Typical Model output (as in a square around mine) or the exact area as a polygon?
- Classification between different mine types?