Land Release Impact Assessment in Colombia
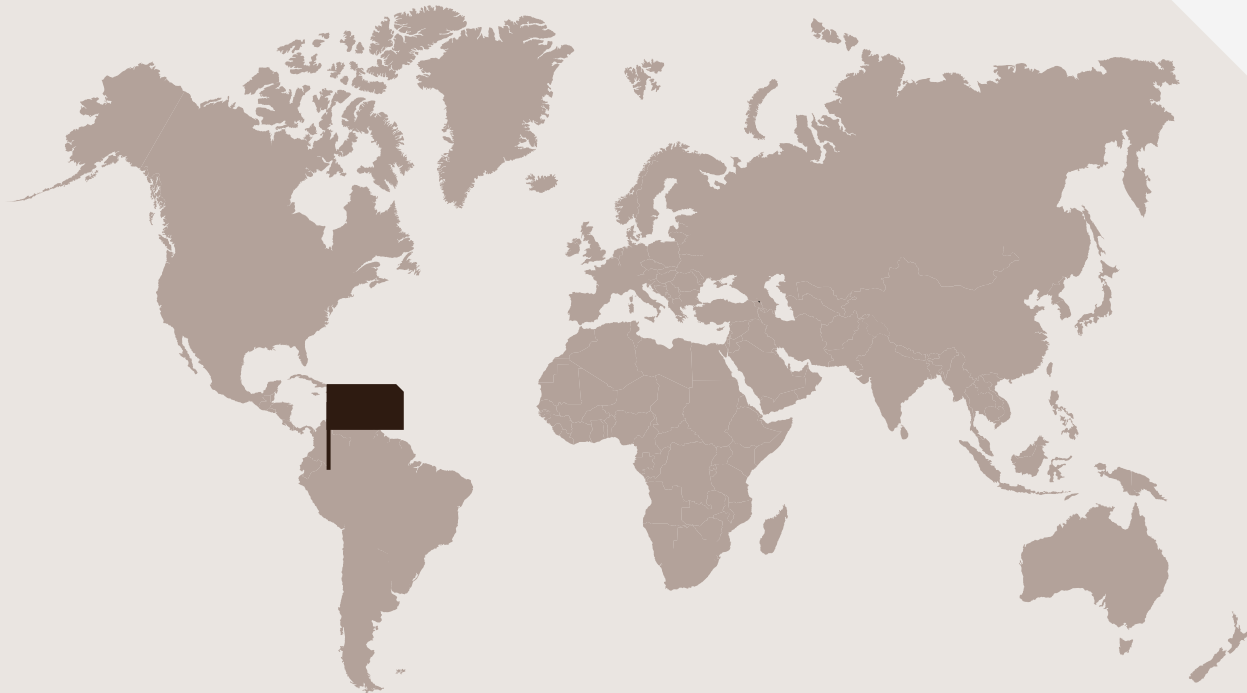
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AGENDA

Project Overview

Background

- Since 1990 more than 7000 civilians and 5000 members of the armed forces have been killed or injured by landmines and explosive remnants of war (ERW) in Columbia.

Purpose

- Compare pre-clearance and post-clearances images to measure the impact of the land release project in Colombia.

Problem

- UNMAS wants to assess the impact of these mine action interventions.
- Current approach: manually extracting features from raw data, such as digitizing footprints or generating land cover maps.
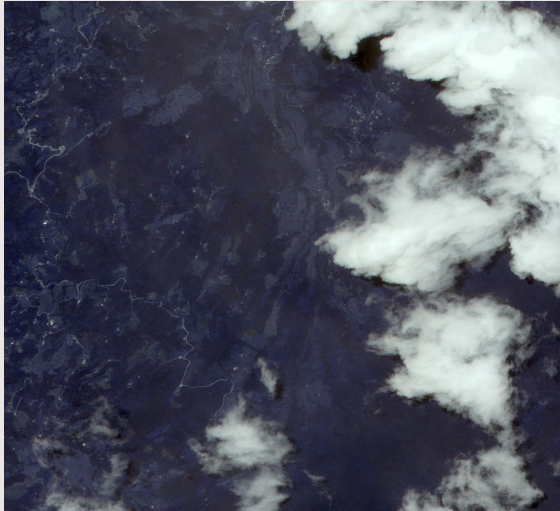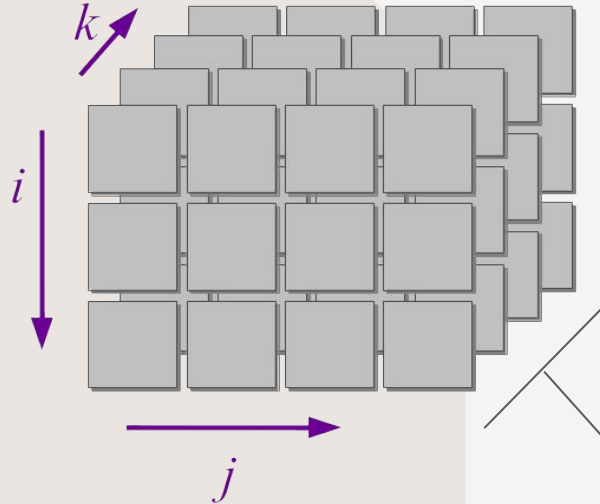
Objective

- Build and train machine learning models to identify and classify new buildings, human settlements, roads and land cover in pre-selected area of interest.

Our Data

.TIF file

(n x m x 8) np array

k

i

j

- **5 AOIS**

- **Before Clearance, After Clearance**

	Wavelength (µm)
Band 1:	0.45-0.52
Band 2:	0.52-0.60
Band 3:	0.63-0.69
Band 4:	0.77-0.90
Band 5:	1.55-1.75
Band 6:	10.40-12.50
Band 7:	2.09-2.35
Band 8:	0.52-0.90

MODEL & RESULTS

- **Classification on pixel level:** CART, Logistic Regression, Random Forest, XGBoost
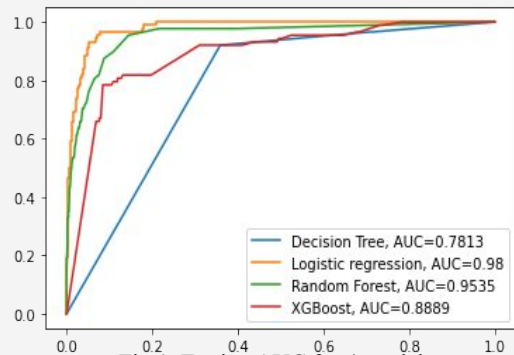
Buildings: 0.98 best AUC
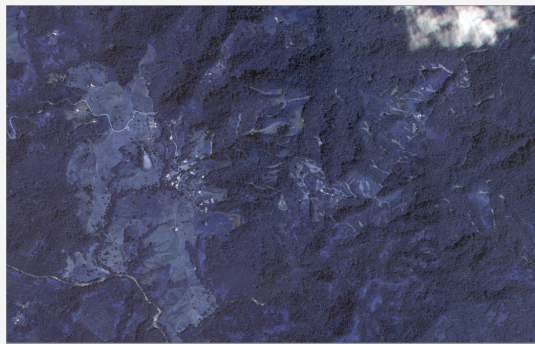

Fig 1. Testing AUC for 4 models

Fig 2.Visualization of Building Identification

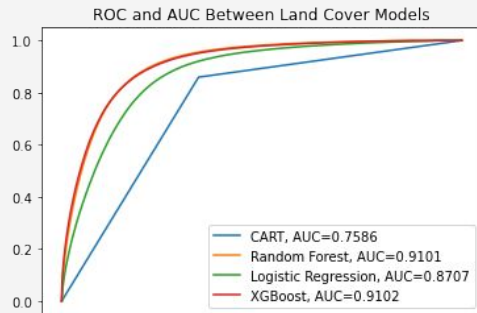**Land Cover: 0.91** best AUC

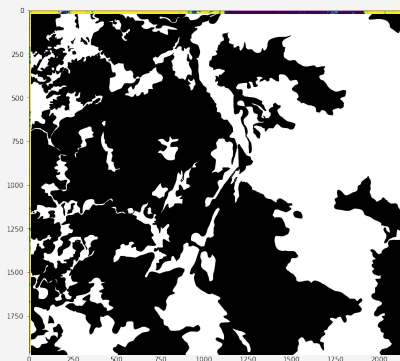Fig 3. Testing AUC for Land Cover Classification

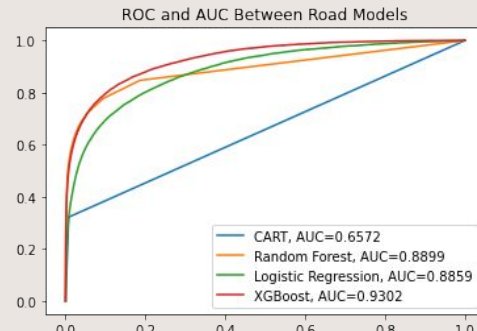Fig 4.Visualization of Land Cover Identification

Road: 0.93 best AUC

Fig 5. Testing AUC for Road Classification

Fig 6.Visualization of Road Identification

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Impacts

Inspect Progress
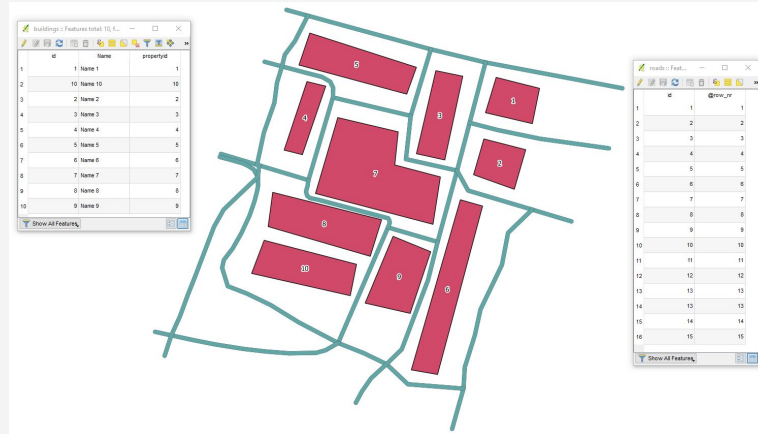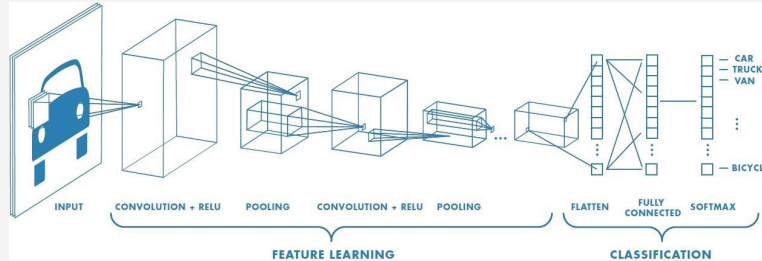Check the effectiveness of mining efforts and relocation policies

Setup for Causal Inference
Does de-mining cause increased land development?

Reproducibility
Models on other types of identifications

Future Tasks

Future Task: Convolutional Neural Networks
Need: more time, more data

Future Task: ARCGIS Pro Pipeline
Convert raster products to shp files