Swiss LiDAR Day

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Detecting fences to improve wildlife connectivity models

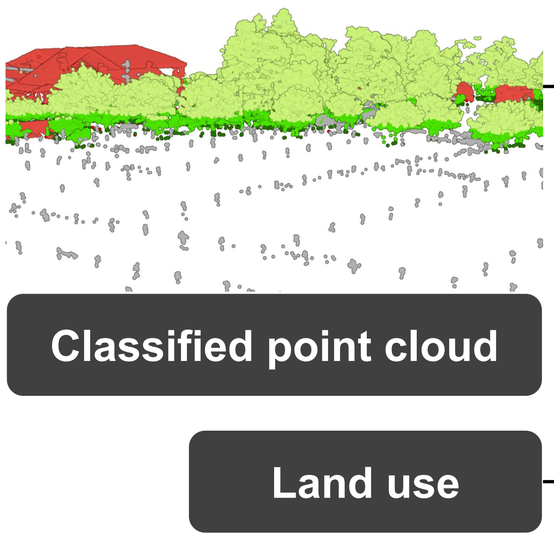
WORK IN PROGRESS

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Missing barriers in connectivity models

Wildlife connectivity models aim to identify both reservoirs and displacement corridors for a given set of species. They include different environment variables such as habitats, topography, human infrastructures, etc.
Fences create constraints on wildlife movements, but there is no existing dataset containing spatial information and characterization of fences. Existing connectivity models do not consider these potential barriers. Assessing the presence and type of fences is possible at a local scale, but not at cantonal level or greater territories.

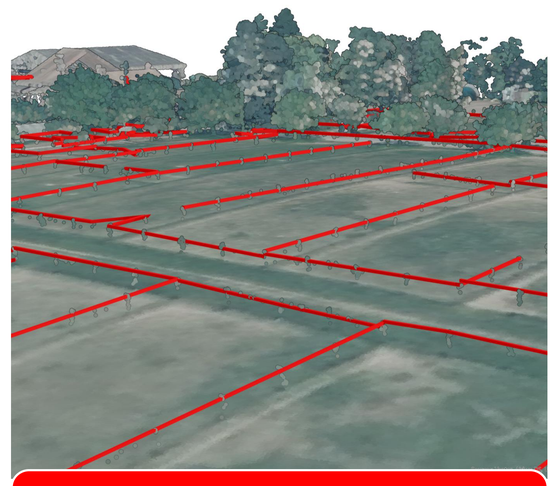
'Point cloud to fences' workflow



Classified point cloud

Land use

Class filter → Spatial land use filter → Cluster to centroid → Spatial ordering → Lines construction → Snapping, combinations → **3D fences**



Detection validation

Improvement of the detection workflow is made by comparison to an existing local dataset of fences collected using aerial, satellite imagery and Google Street View (R. Martinuzzi, JBG, 2021).
If the first results are promising, several mitigable challenges remain, such as removing power lines, orchards and other urban elements. But the main limit is when fences are occulted by a vegetation cover.
Finally, we aim to differentiate fence types.

Validation dataset vs. LiDAR detection →

- On-site observed fences (JBG, 2021)
- LiDAR (SITG, 2025) detected fences

