A QGIS Plugin for optimized cable road layout planning
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Context / Problem
- Planning of a cable road is a complex task
- Available planning tools do not fulfill the requirements of the practice (wrong or unknown method to compute skyline properties / not integrated in a GIS / do not optimize the solution)

Conclusions & Outlook
- Simplifies Cable Road planning & more efficient solutions
- Prototype currently under evaluation
- Ability for manual editing remains necessary

#1 Optimize cable road layout

Decisions:
- Locate Intermediate Supports
  - Location?
  - Height?

Constraints

[I] Min. clearance

[II] Stresses & strains within limits

Load Path
Standing Skyline [Catenary]

Objective: Minimize
Number and height of intermediate supports

[Bont and Heinimann 2012]

#2 Identifying support and anchor trees from remote sensing data

- Objective: Predicting Tree Height and DBH from available Remote Sensing data
- 72 method combinations were evaluated (3 Types of CHM x 8 Filter Methods x 3 Tree detection algorithms)
- Best results were achieved based on ALS Data - resolution dependent Gauss Filter - local maxima tree detection algorithm
- Tree position and tree height of the correctly detected trees show useful accuracies for cable line planning.

#3 Manual Editing

Fig.: Result of single tree detection of the Method LM1 - F1 - RawLi03 for NFI plot 76667

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