

New Features in TerraMatch

Arttu Soinen

Software developer

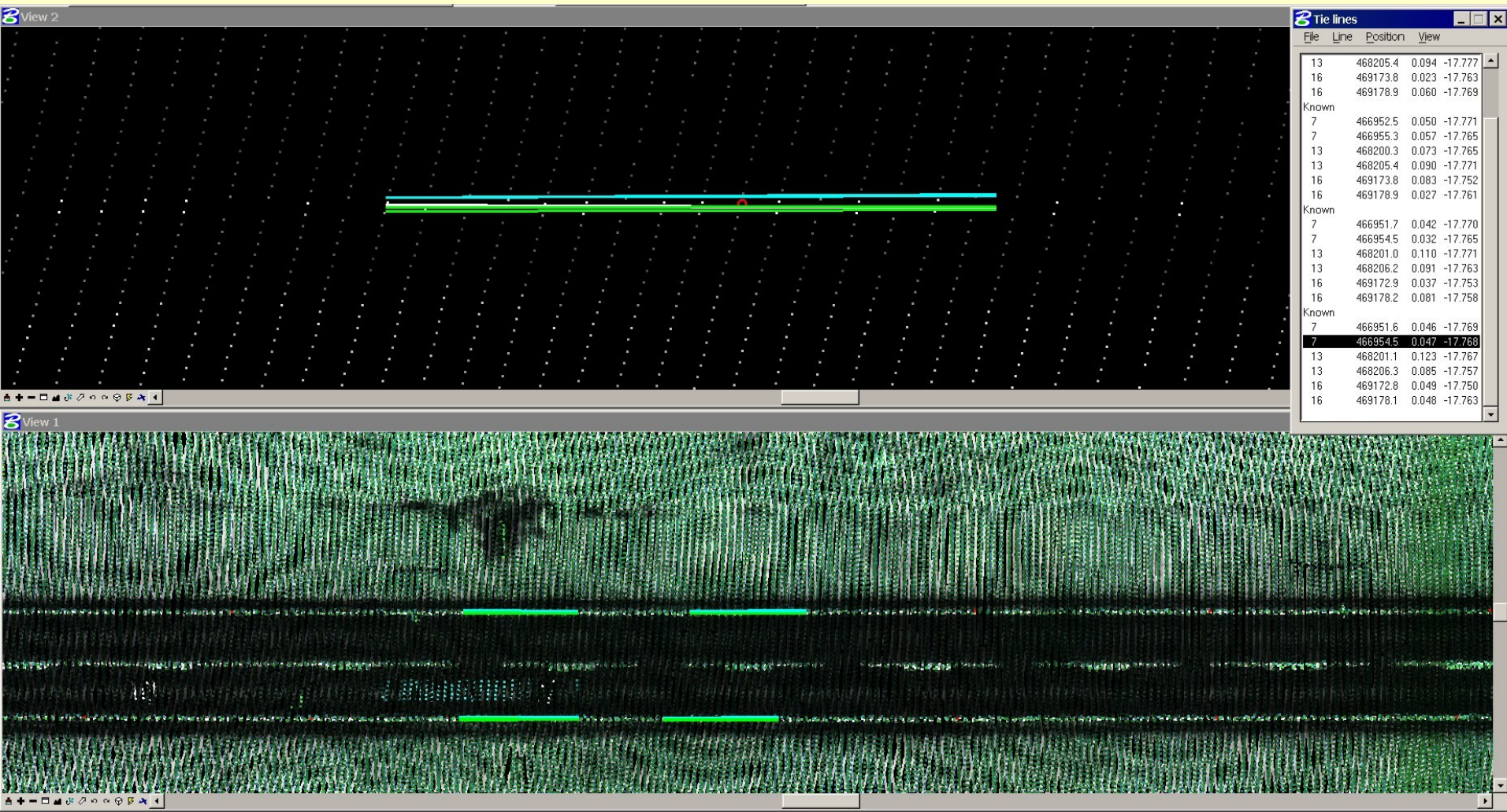
Terrasolid Ltd

Match Forward and Backward & Find Fluctuations improvements

- **Save results** menu command for saving results from *Find Fluctuations* or *Match Forward and Backward*
- View or apply results later with using *Apply Correction*
- **Statistics** menu command for displaying statistics from *Find Fluctuations* or *Match Forward and Backward*

Tie lines

- Matching based on intensity features
- Version 007.004 has entry and left/right adjustment



Tie line types

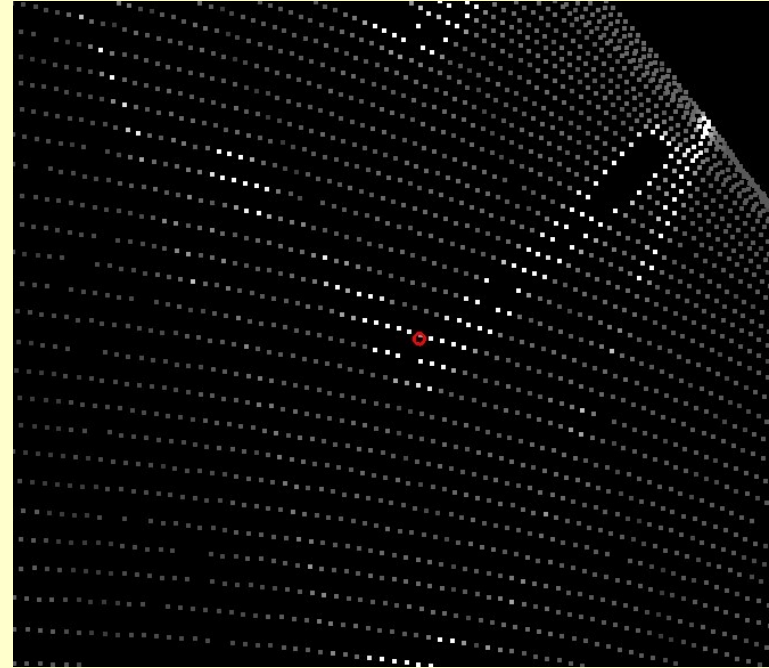
- **Point** – point feature on ground, seen by multiple lines
- **Ground line** – linear feature on ground, multiple lines
- **Slope line** – xyz line on terrain slope or roof, multiple lines
- **Known line** – known xyz point on ground, one or multiple lines, line runs thru known point

Why tie lines?

- Ability to match flightpasses in flat terrain – requires intensity features instead of sloped terrain
- Use same control measurements for images and LIDAR
- Way to measure LIDAR xy accuracy against control measurements
- Makes it possible to match vehicle mounted LIDAR drive passes together and to control measurements

Point tie line type

- Point feature on ground
- Seen multiple times



1. User enters approximate xy position
Software find passes which see the location
2. User enters xy position of each observation
Software computes z from fitted plane equation

Ground line type

- Linear feature on ground
- Seen multiple times

Manual

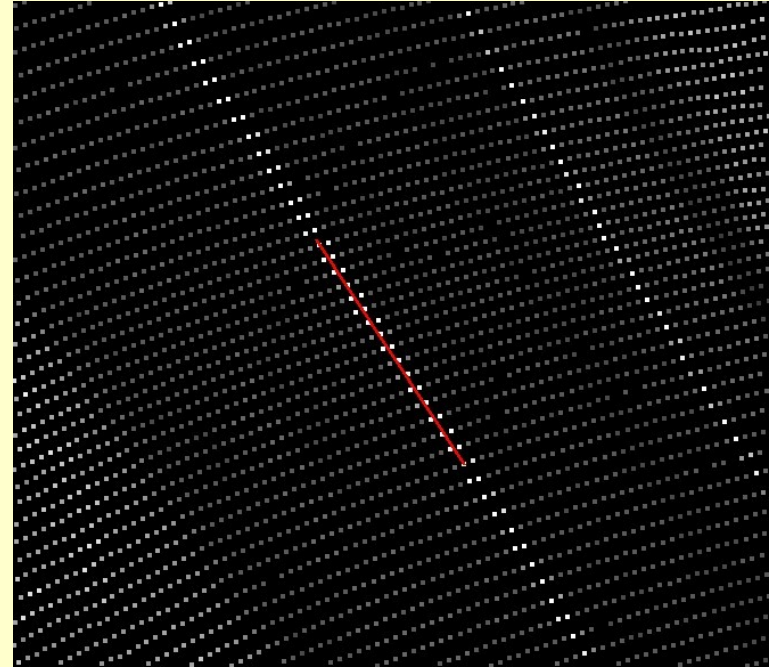
Can do anything user sees

1. User enters approx start and end xy
2. User enters start and end xy in each pass
Software computes z from plane equation

Auto line search

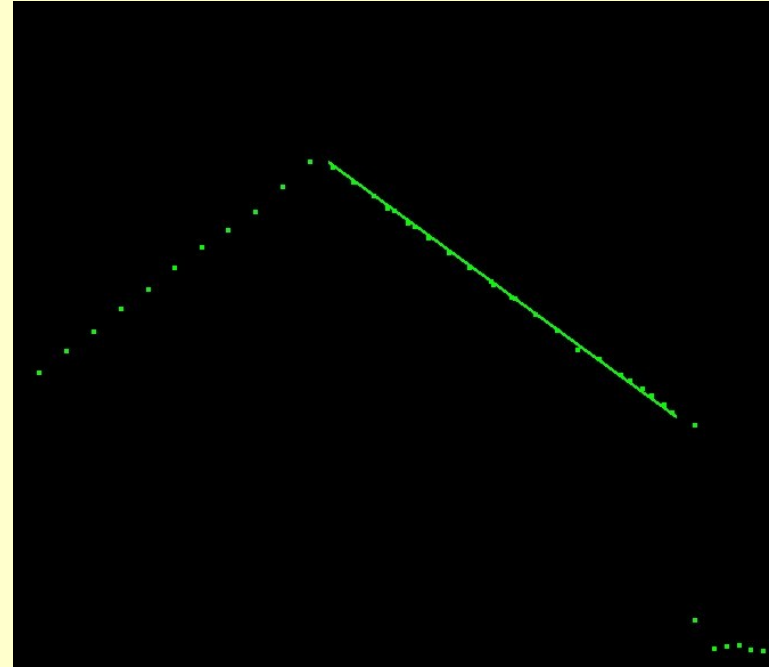
Requires bright line on darker background

1. User enters approx start and end xy



Slope line type

- Xyz line on terrain slope or roof
- Seen multiple times



1. User enters section right and left point
Software finds passes
2. User enters start and end xyz in each pass

Known line type

- Known xyz point on ground
- Seen once or multiple times
- Line runs thru known point

Manual

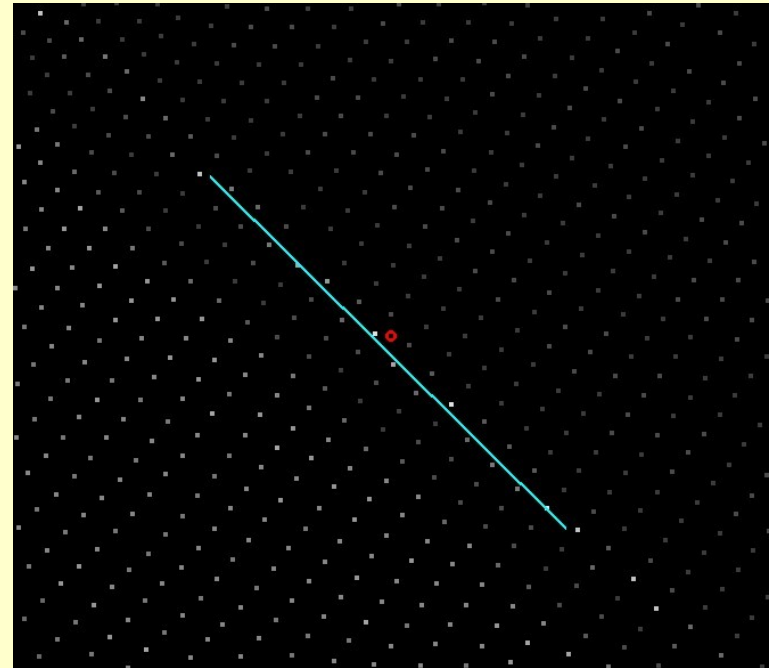
Can do anything user sees

1. User enters known xyz
2. User enters approx start and end xy
3. User enters start and end xy in each pass

Auto line search

Requires bright line on darker background

1. User enters known xyz
2. User enters approx start and end xy



Adjustment from tie lines

- Current version:
 - *Find Fluctuations* can solve left/right corrections
- Future versions will use tie lines:
 - *Find Match* as optional input for solving heading, roll, pitch, mirror scale, easting, northing, elevation for the whole data set or per line
 - *Find Fluctuations* as optional input for solving heading, roll, pitch, easting, northing, elevation corrections