







Chris Lucas







### Goal

• 3D models of buildings from LiDAR point clouds





# Challenge

• Tracing vertical walls (within a building footprint)





• Find the boundary points





- Find the boundary points
- o Segment into walls

#### Geodan



# Approach

- Find the boundary points
- Segment into walls
- o Fit lines to wall points





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- Determine primary orientations



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- Set walls to primary orientations or 90°

#### Geodan



# Approach

- Find the boundary points
- Segment into walls
- o Fit lines to wall points
- Determine primary orientations
- Set walls to primary orientations or 90°
- o Compute intersections



### Challenges

- Find the boundary points
  - Concave hull (A. Moreira and M. Santos, 2007)
- o Segment into walls
  - o Too sensitive to parameters
  - New approach:
    - o Create a convex hull
    - Use hull points as segment boundaries
    - o Check fit of each segment
    - Recursively fit convex hulls until all points fit well
    - Merge segments in same direction







#### Case



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122570 122580 122590 122600 122610 122620 122630 122640 122650









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ln.n6bo



Results







#### Chris Lucas

# https://github.com/Geodan/concave-hull https://github.com/Geodan/building-boundary (WIP!)

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