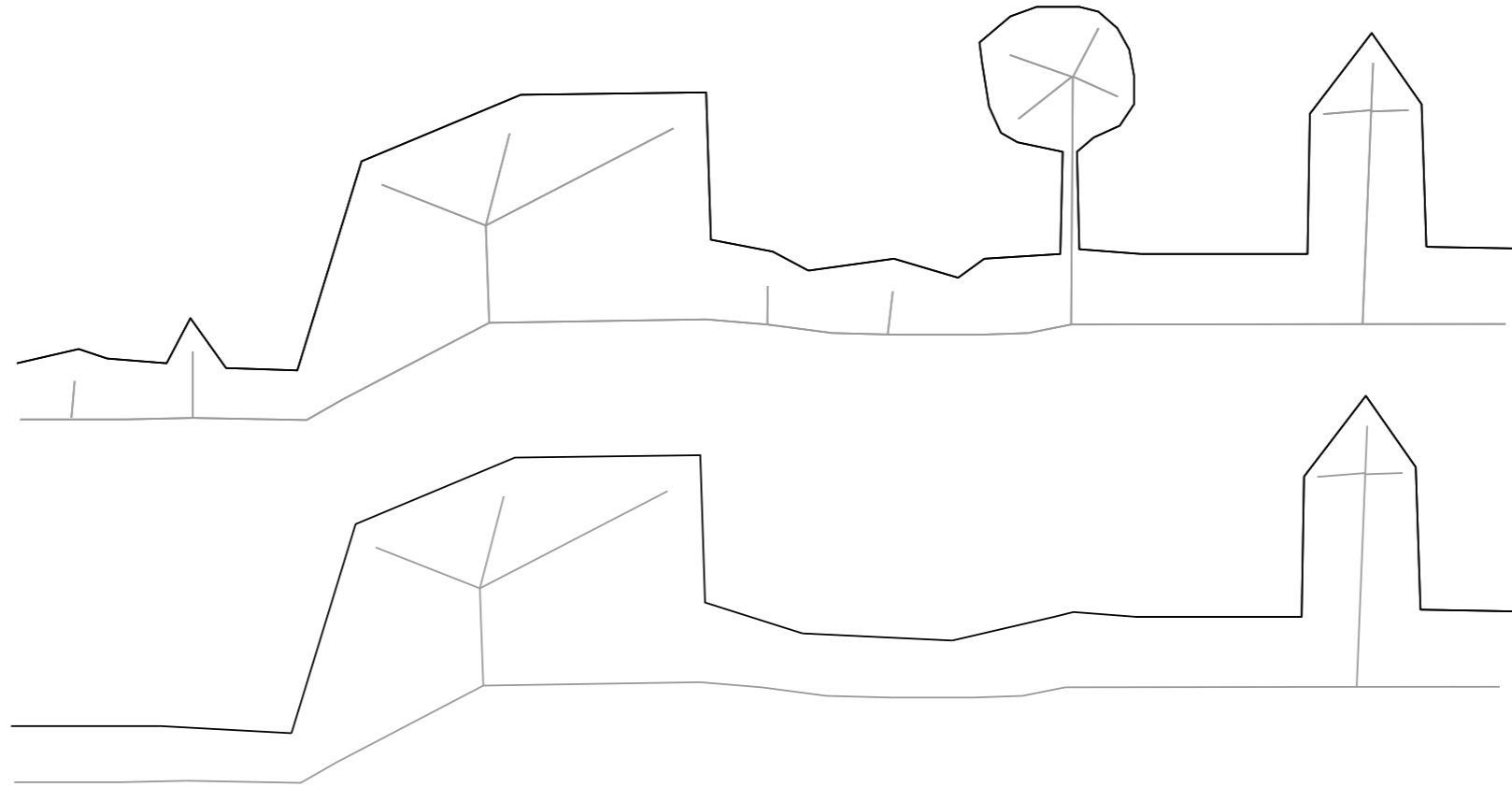


dike

tree

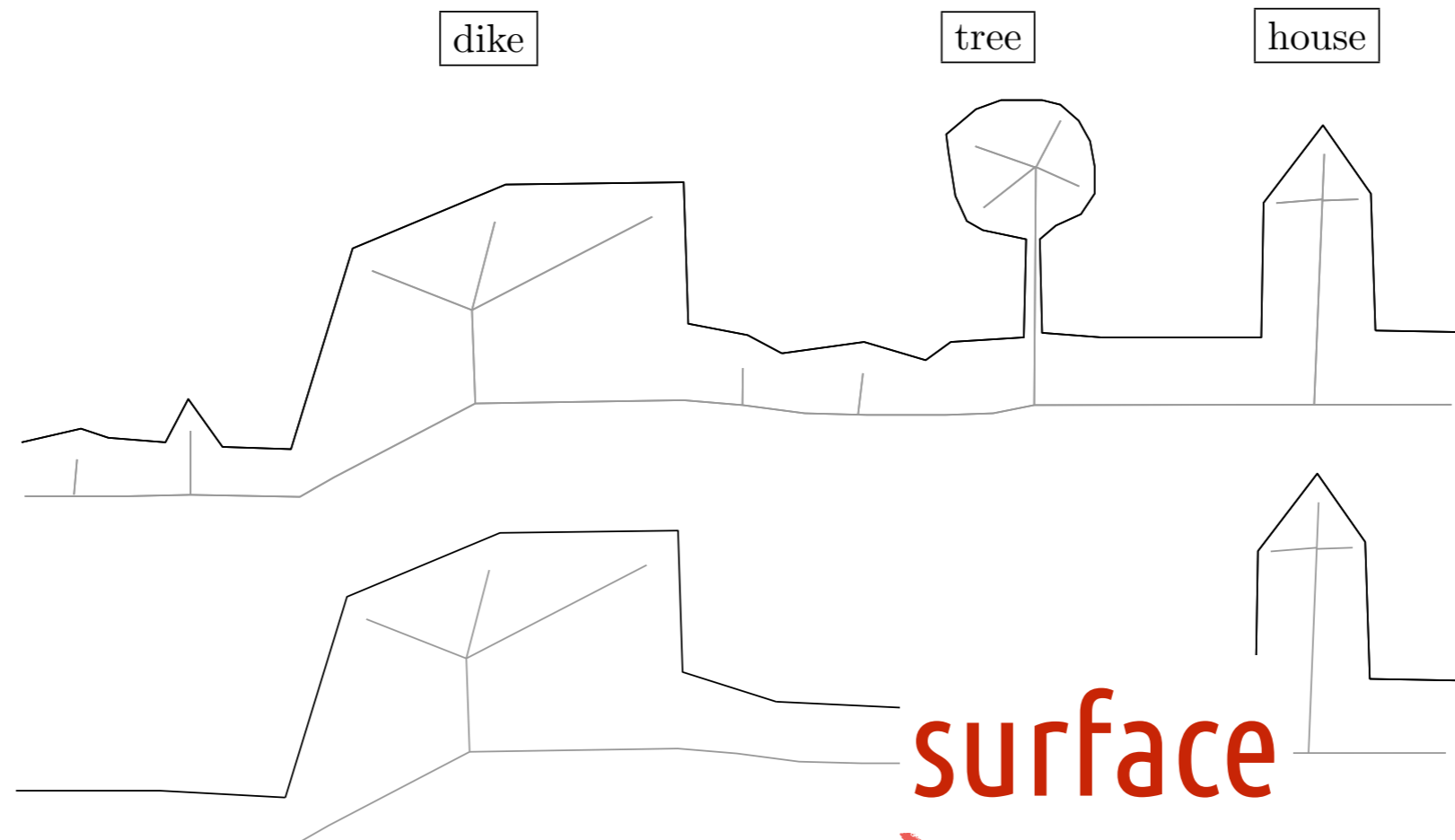
house



Simplification of digital terrain models using feature-based three-dimensional methods

Hugo Ledoux, Ravi Peters and Jantien Stoter

3DSM 1st user committee meeting
Delft, 2014/02/23



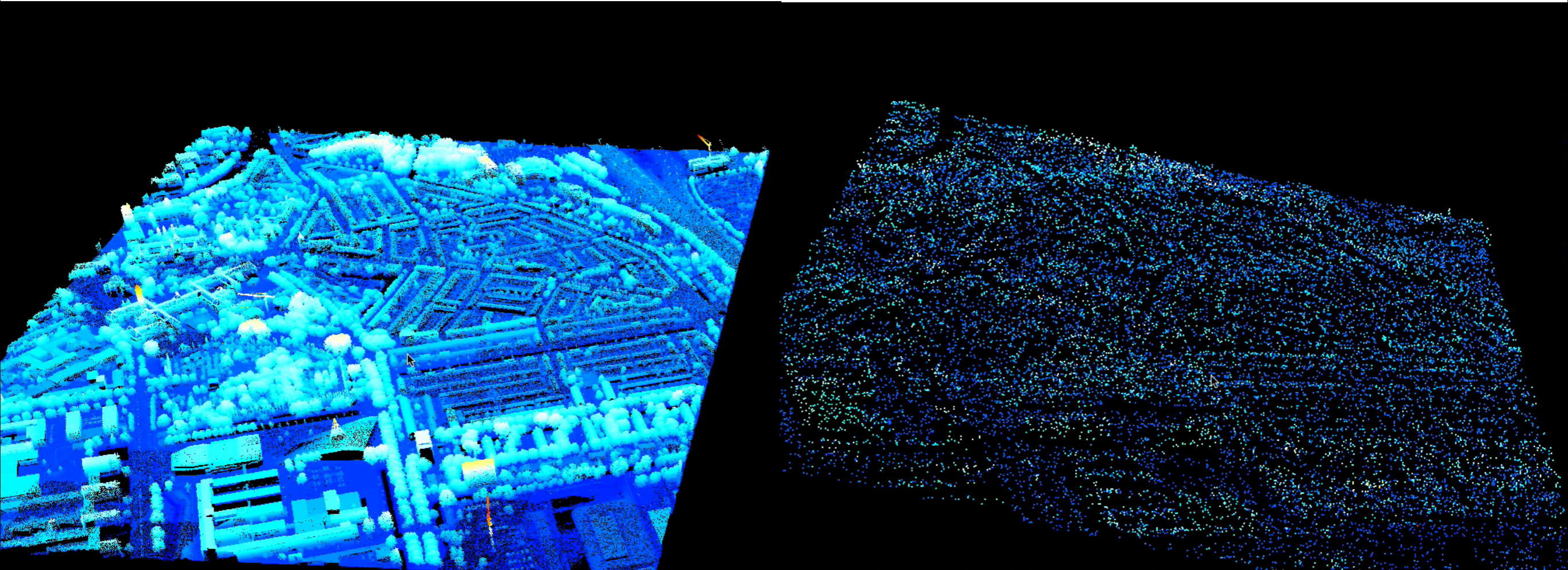
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3DSSM

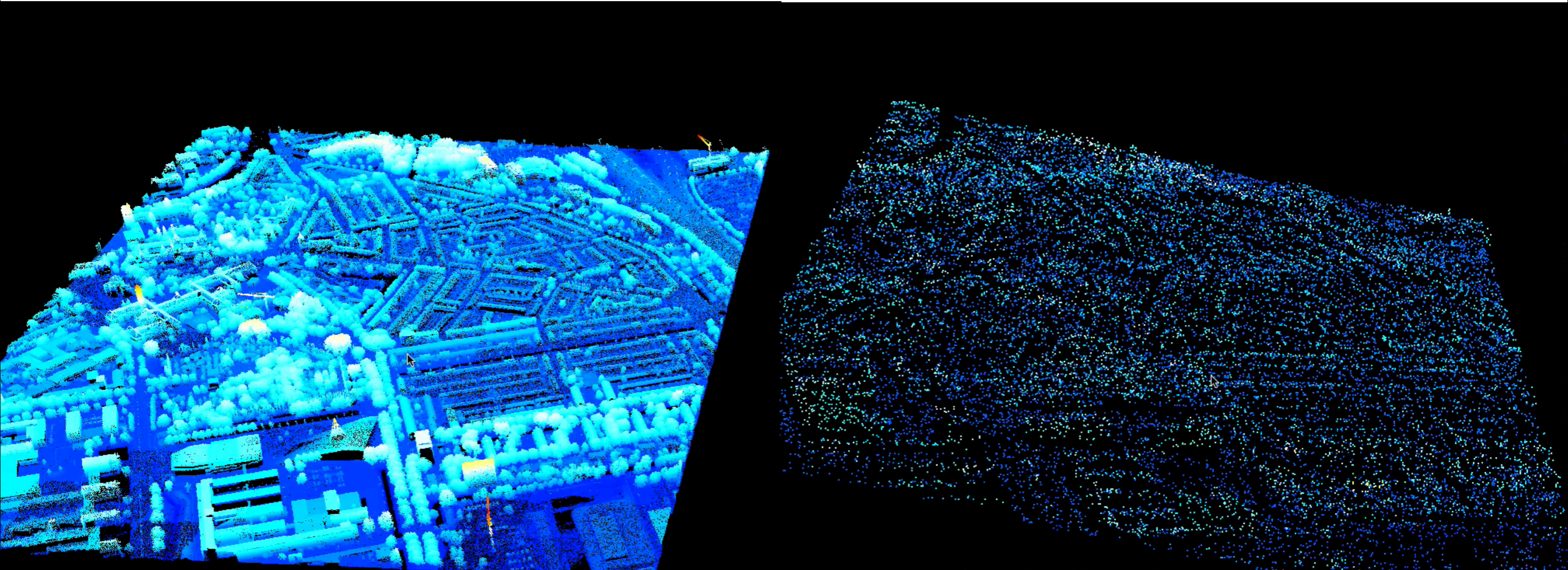
Practitioners use simple methods



raw AHN2

thinned 1000

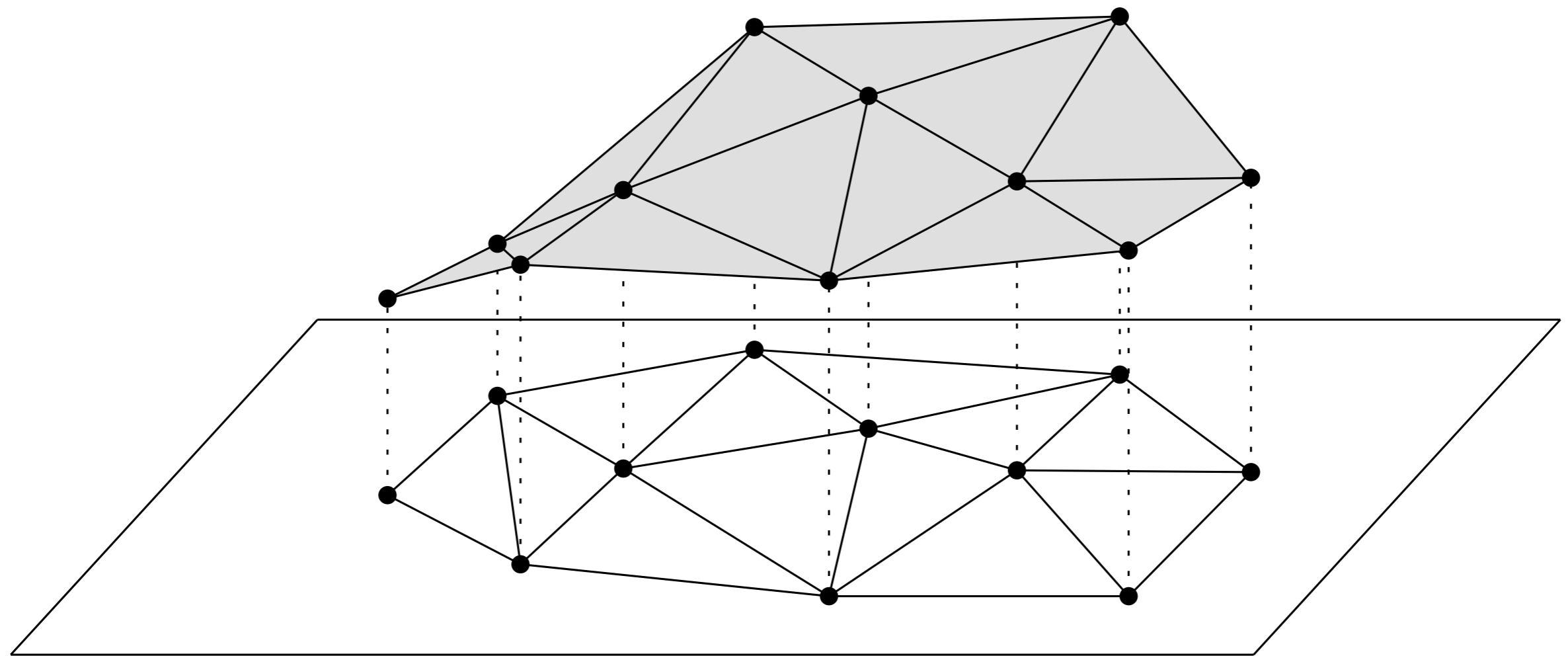
Practitioners use simple methods



raw AHN2

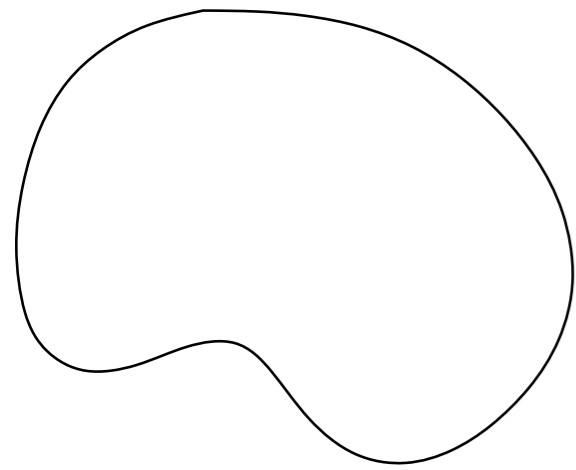
thinned 1000

Practitioners use simple methods

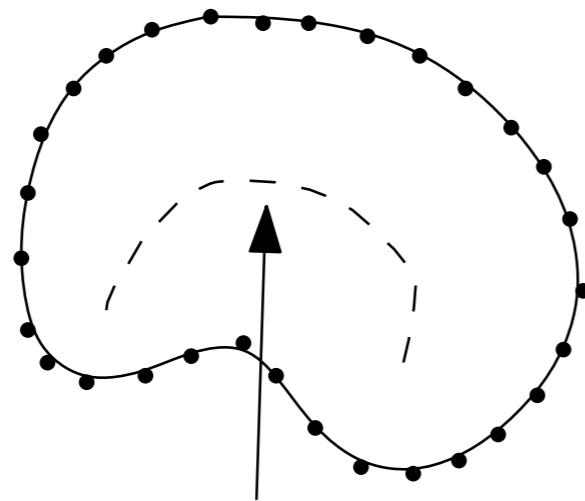


reduction to 2D plane

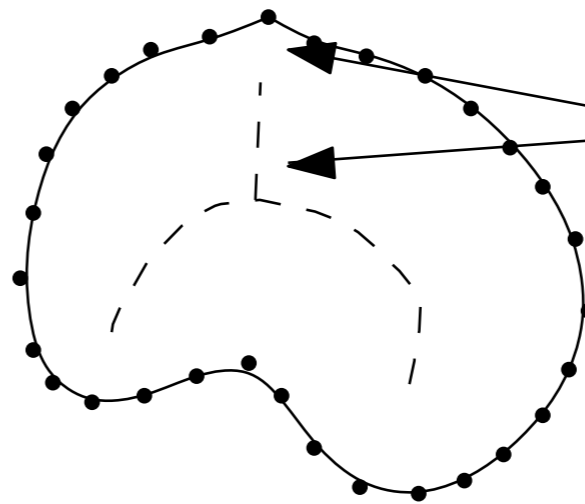
Medial axis transform (MAT) = skeleton



an object



its skeleton

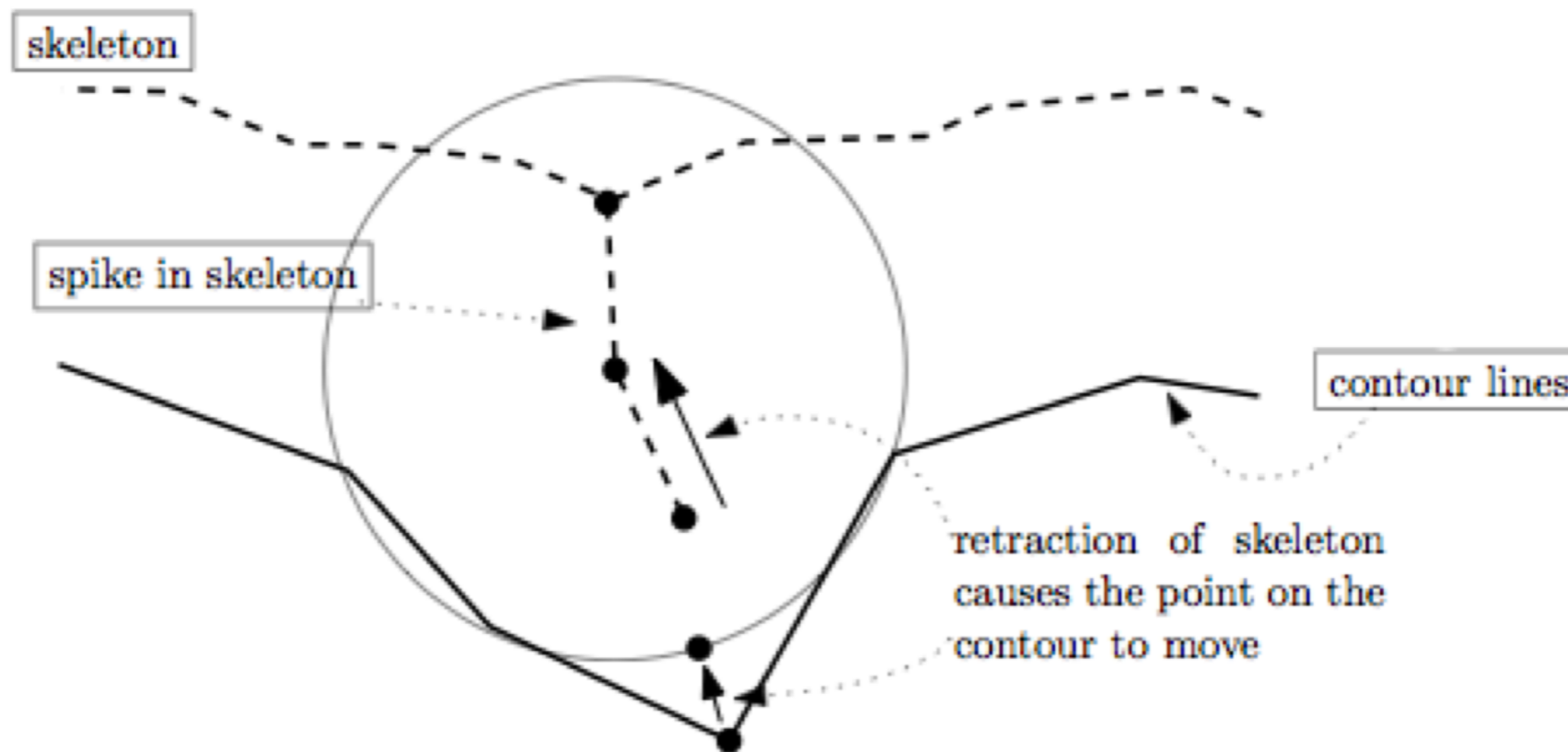
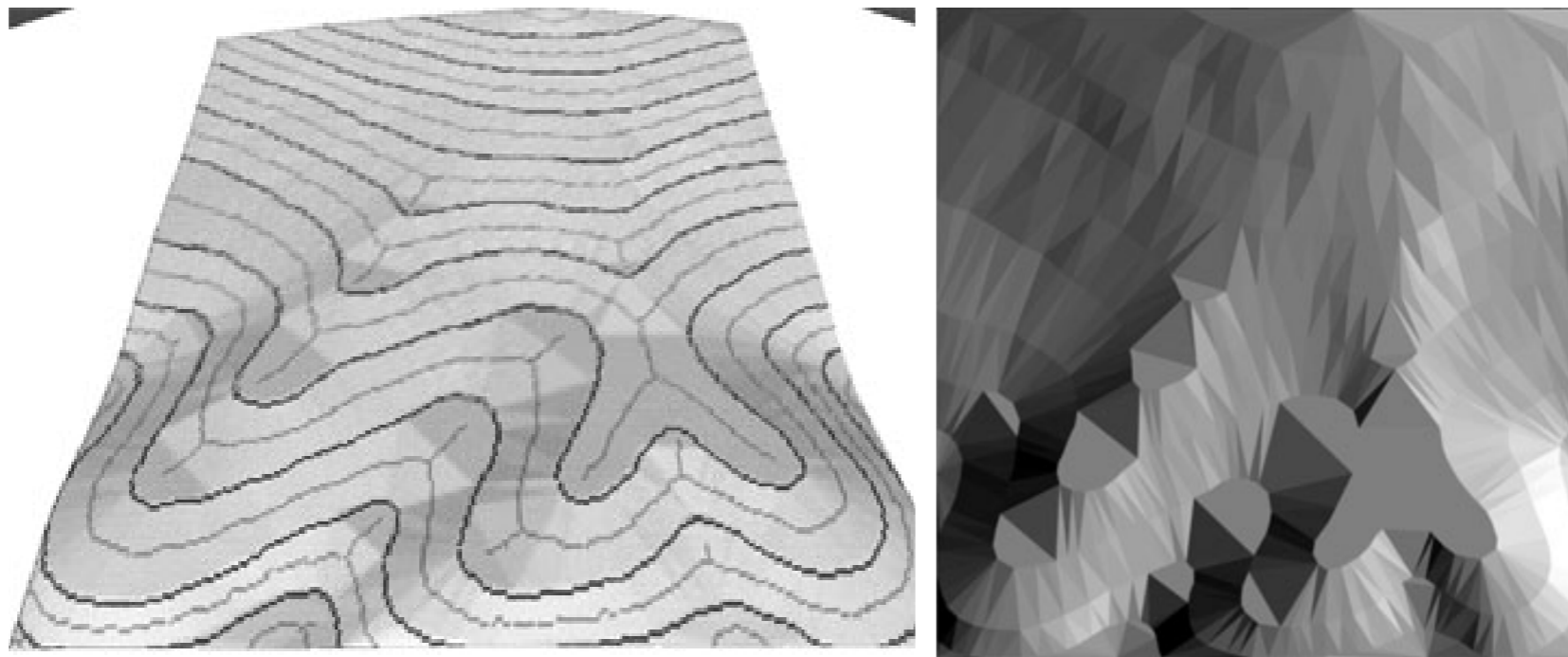


look at the bump,
it creates a spikes
in the skeleton

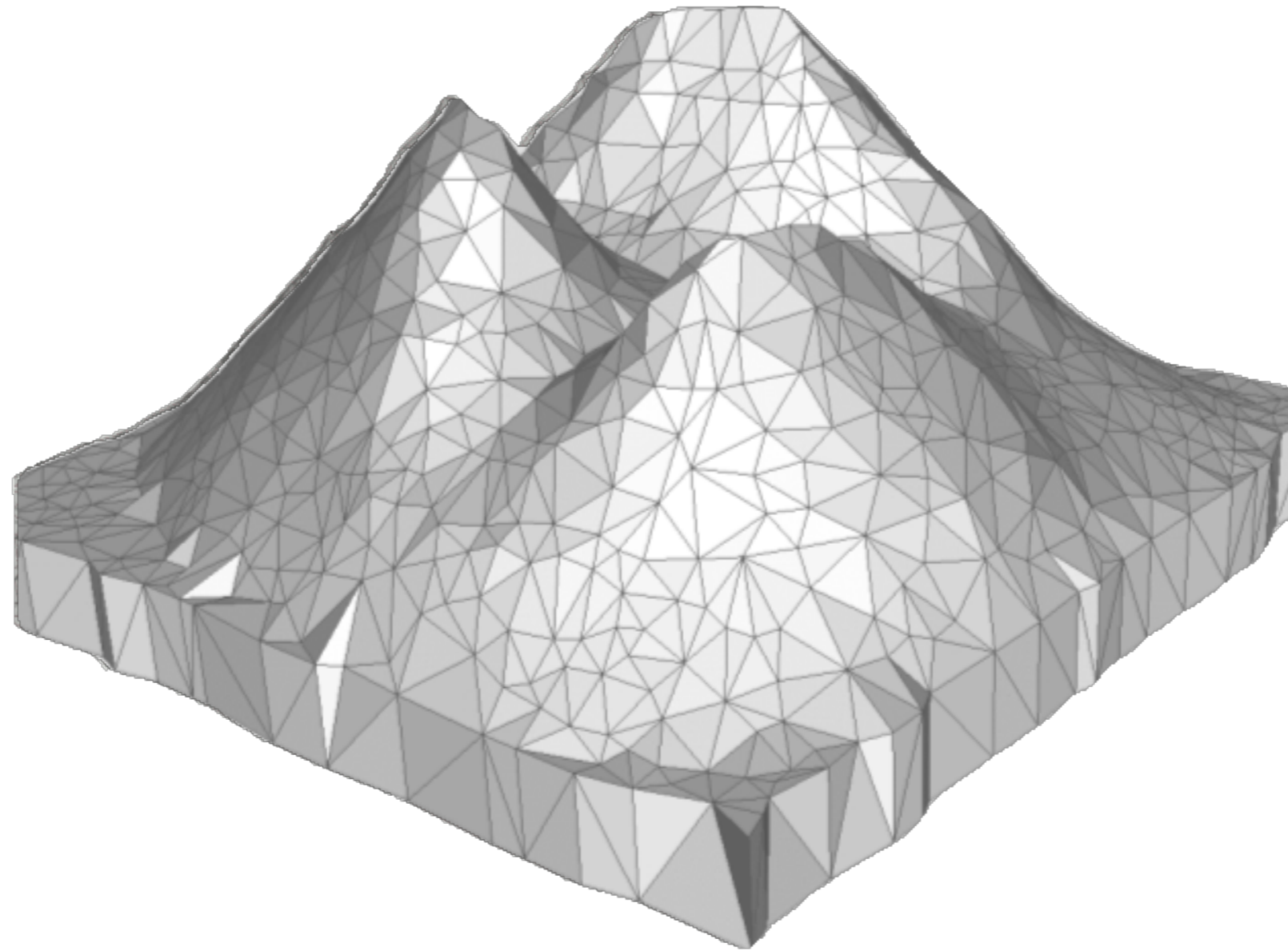
Medial axis transform (MAT) = skeleton

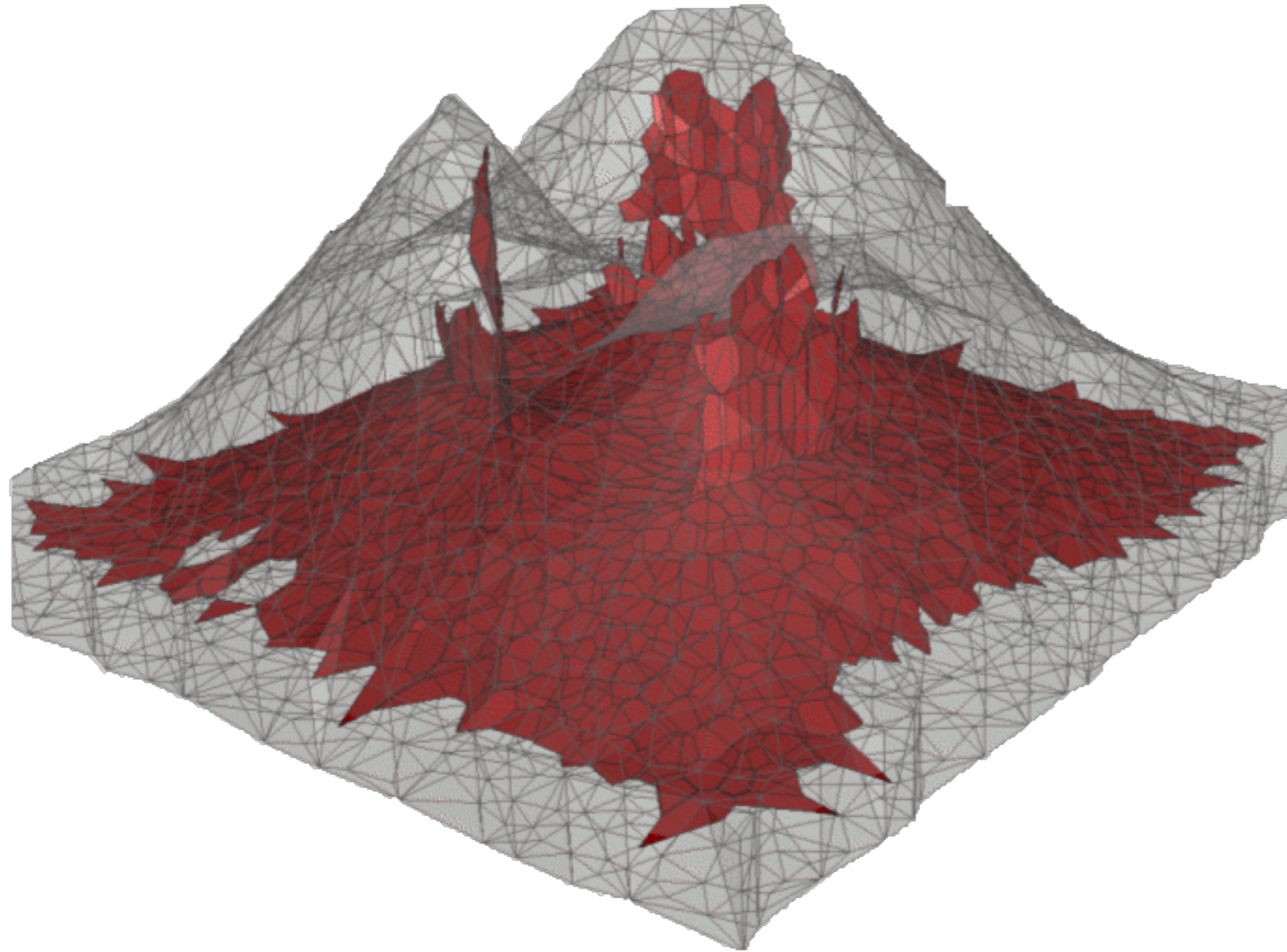


Dakowicz & Gold (2003)

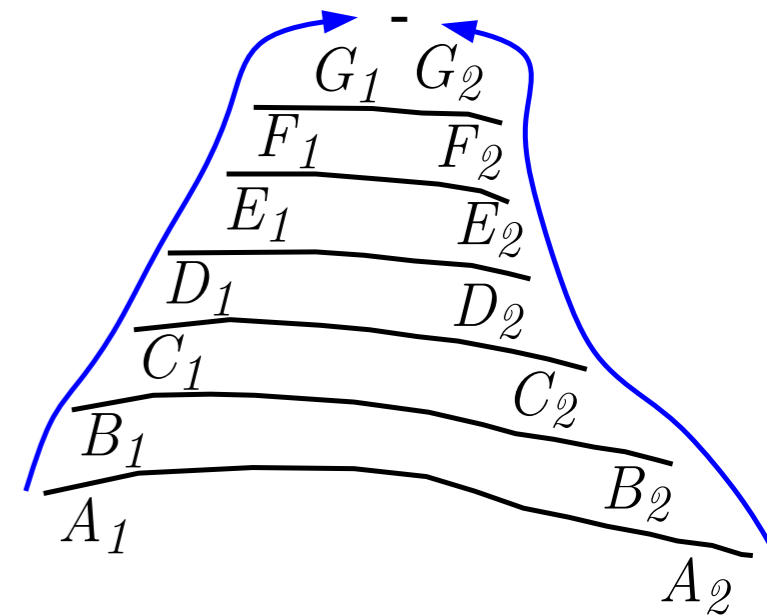
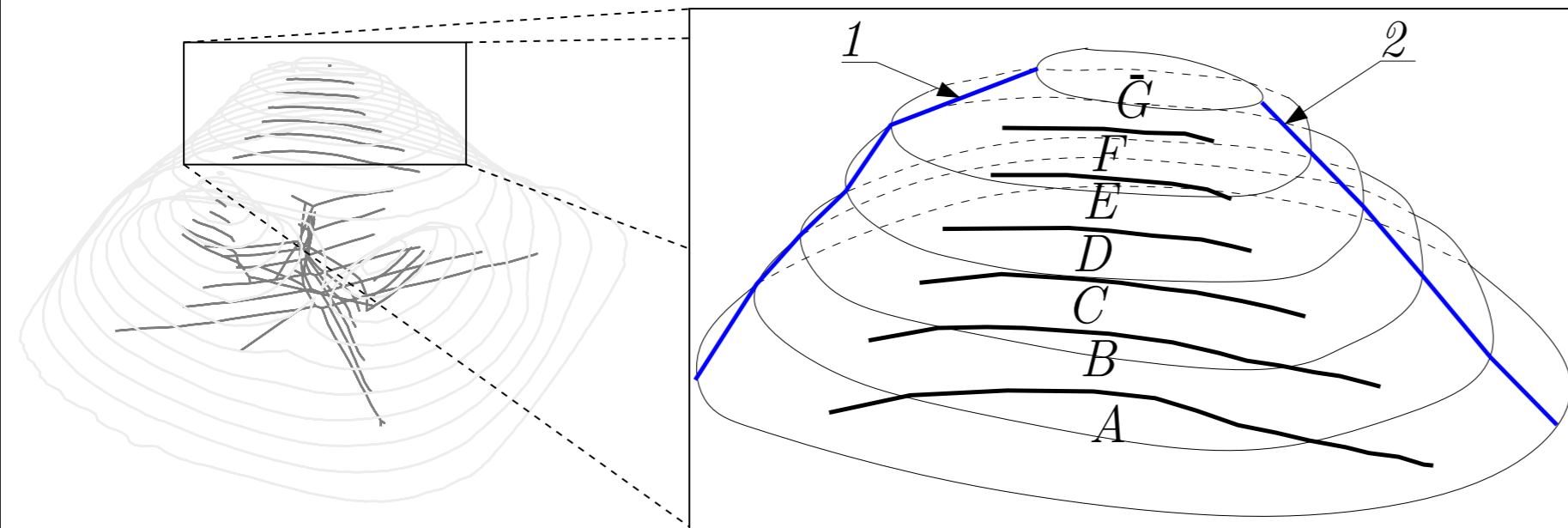


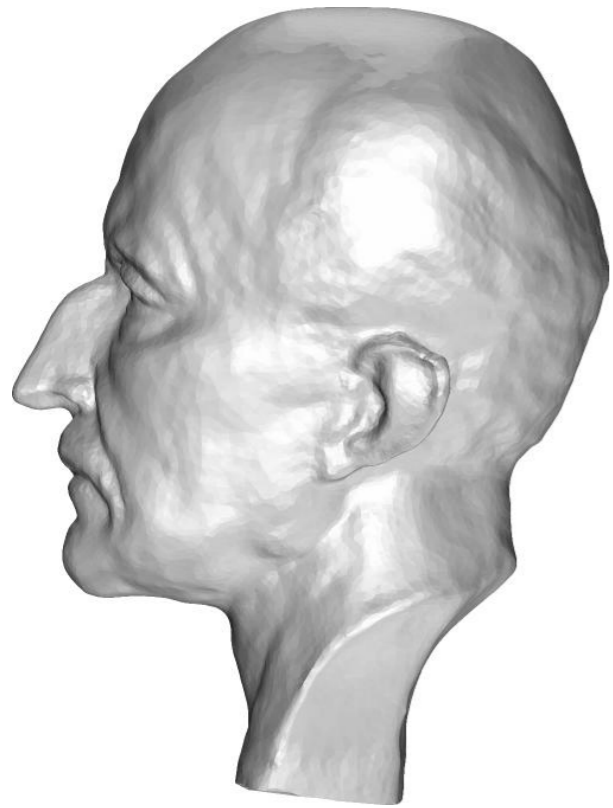
Idea of the skeleton retraction in 2D to generalise contour lines





Matuk (2006)

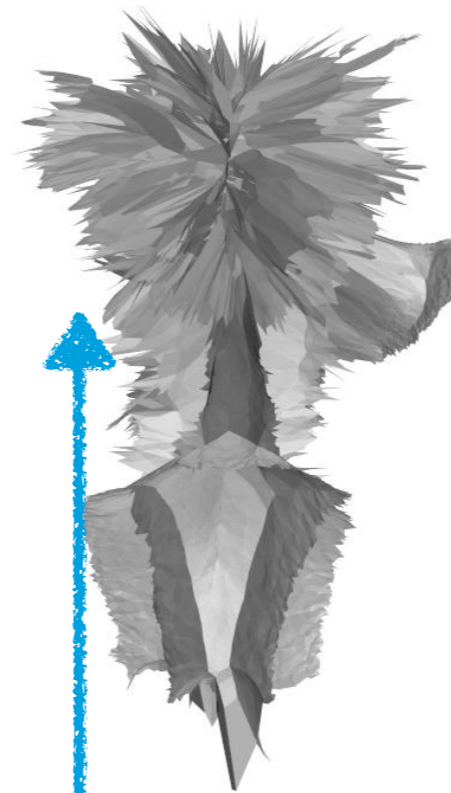




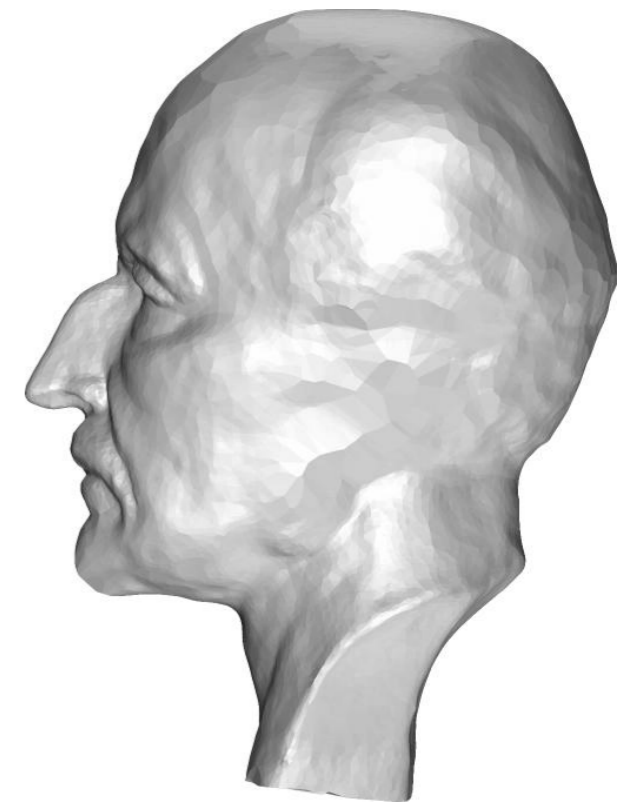
input



MAT



**ear
removed
from MAT**



results

Ma, Won Bea & Choi (2012)



original
IVI=140,279



$\epsilon=0.2$
IVI=109,521



$\epsilon=0.4$
IVI=63,153



$\epsilon=0.6$
IVI=35,650



$\epsilon=0.8$
IVI=20,475



$\epsilon=1.0$
IVI=11,814

Can the MAT-concept be applied to analyse and generalise DSMs in a practical manner that improves on current method?

Can the MAT-concept be applied to *analyse* and generalise DSMs in a practical manner that improves on current method?



identify features, or sub-features

1. reduce # of points
2. remove a (sub-)feature

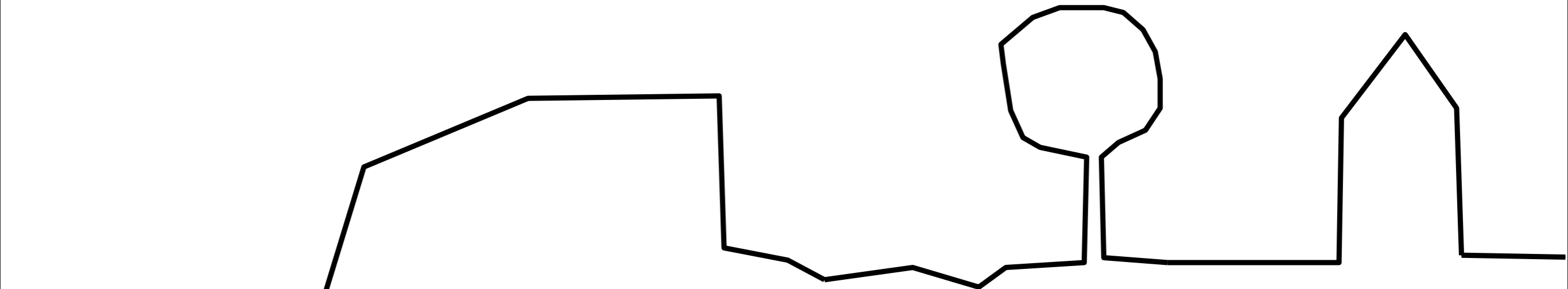
Can the MAT-concept be applied to analyse and *generalise* DSMs in a practical manner that improves on current method?



dike

tree

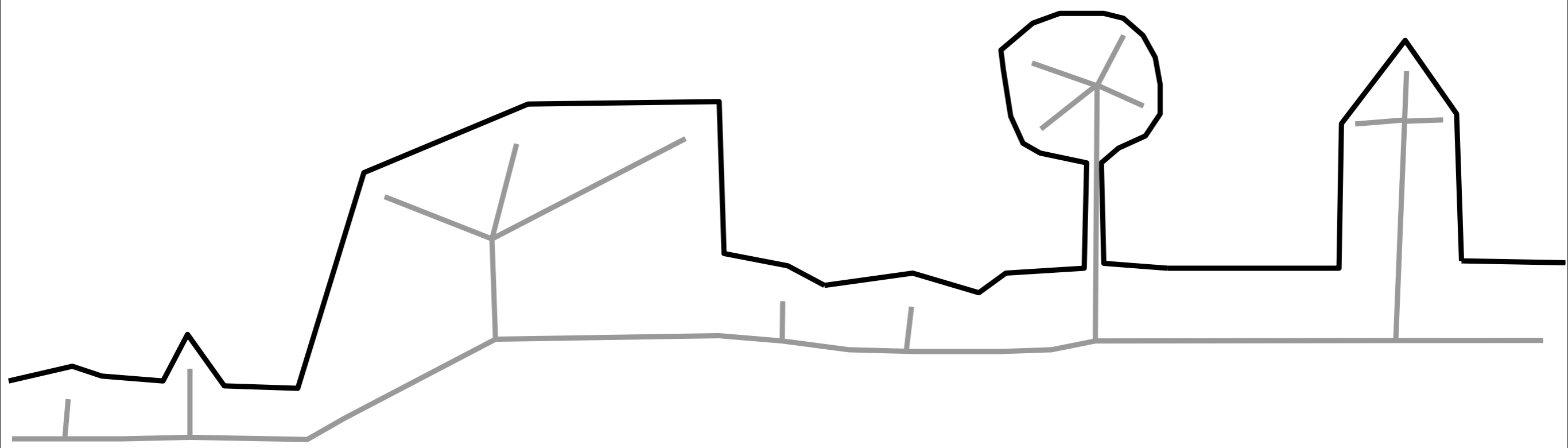
house



dike

tree

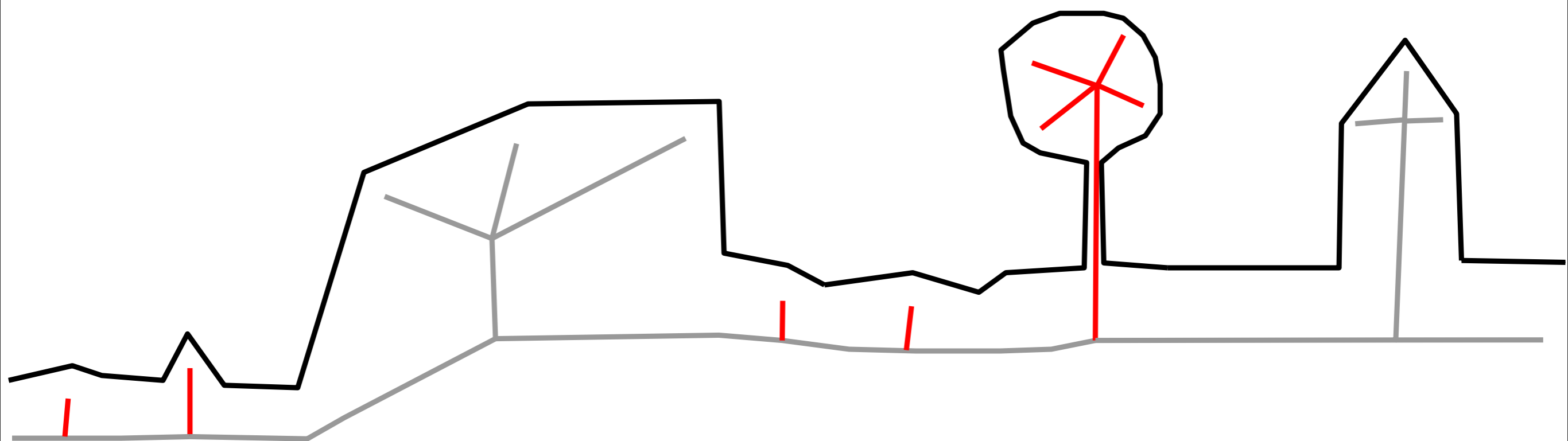
house



dike

tree

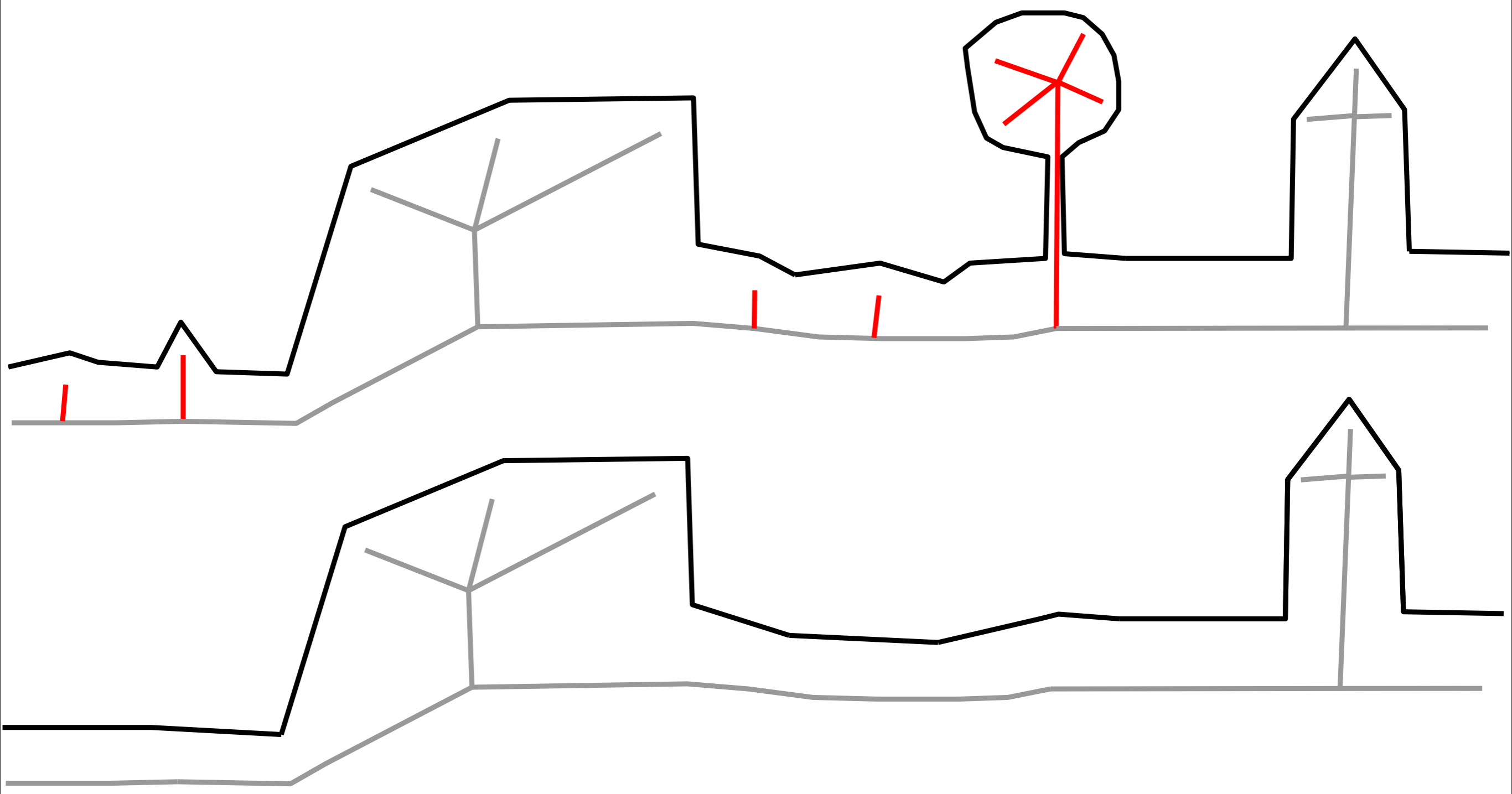
house



dike

tree

house



Construction?

1. 3D Voronoi diagram
2. raster-based methods

Construction?

- ~~1. 3D Voronoi diagram~~
2. raster-based methods
3. shrinking-ball



Thank you

References

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