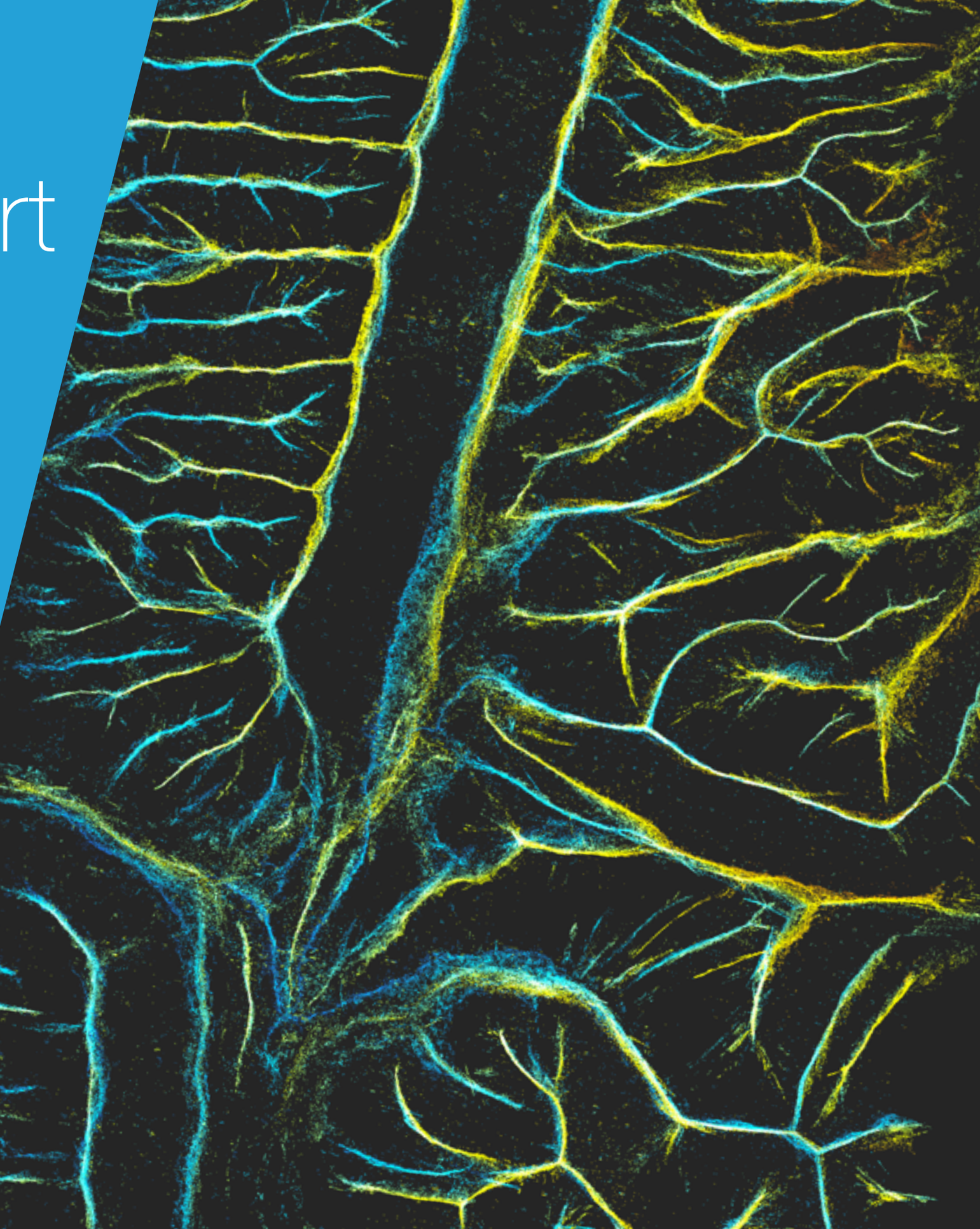
3DSM
Progress report

3rd User Committee meeting
Amersfoort, 19 may 2015

Ravi Peters
Hugo Ledoux
Jantien Stoter

TU Delft
3Dgeoinfo



Overview

1. Achievements
2. Current work
3. Future work

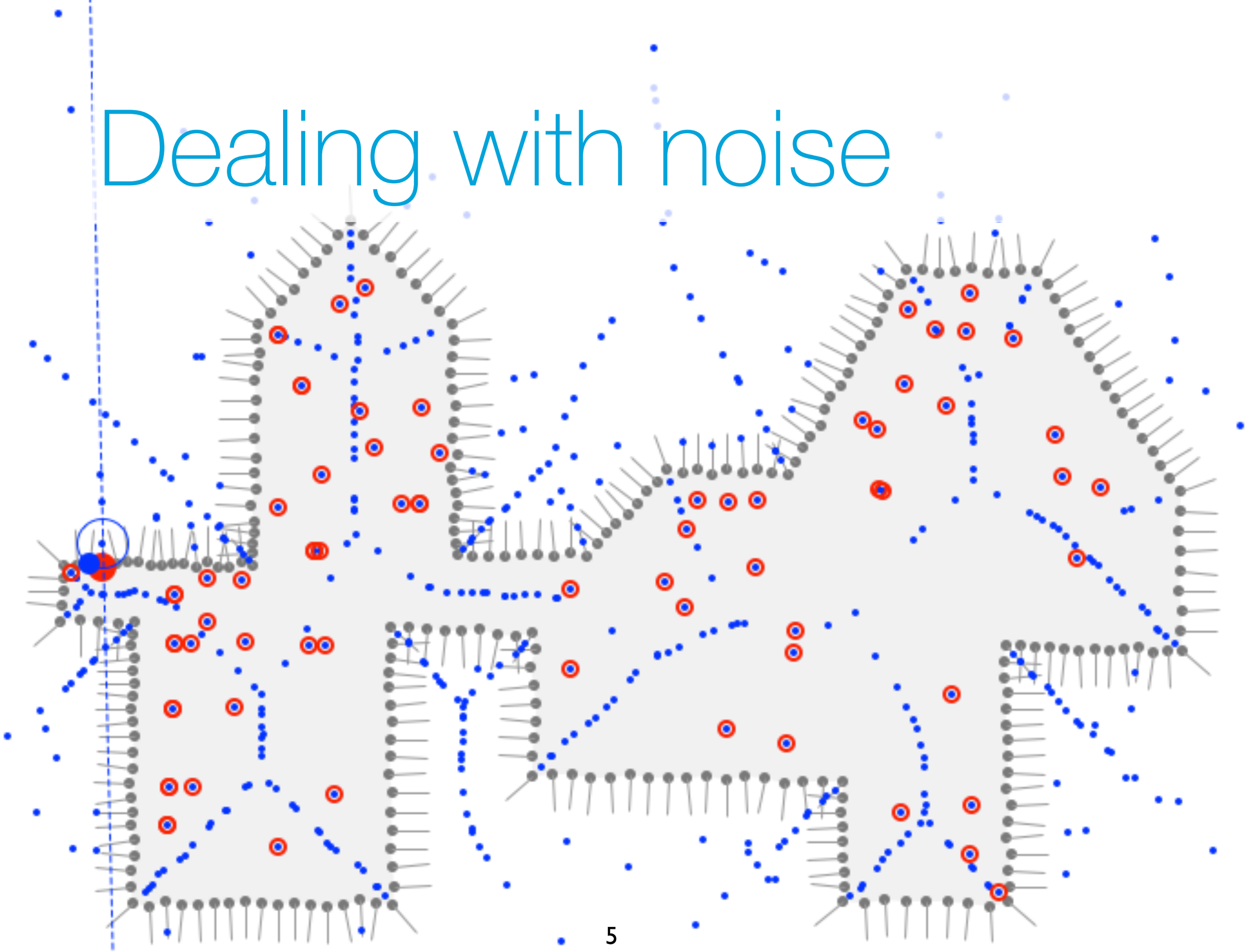
Achievements

MAT approximation

Shrinking ball algorithm
(Ma et al., 2012)

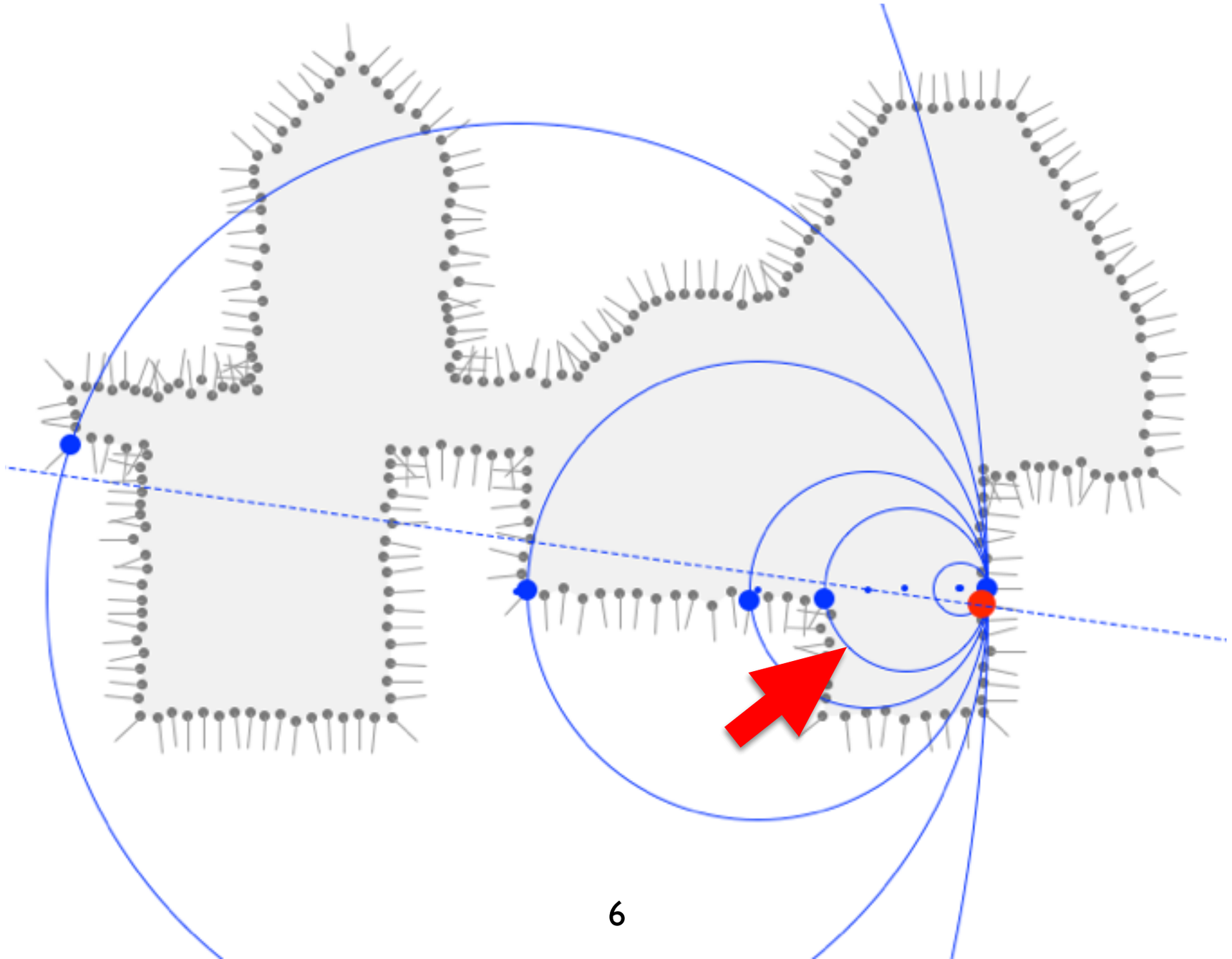
https://vimeo.com/84859998

Dealing with noise

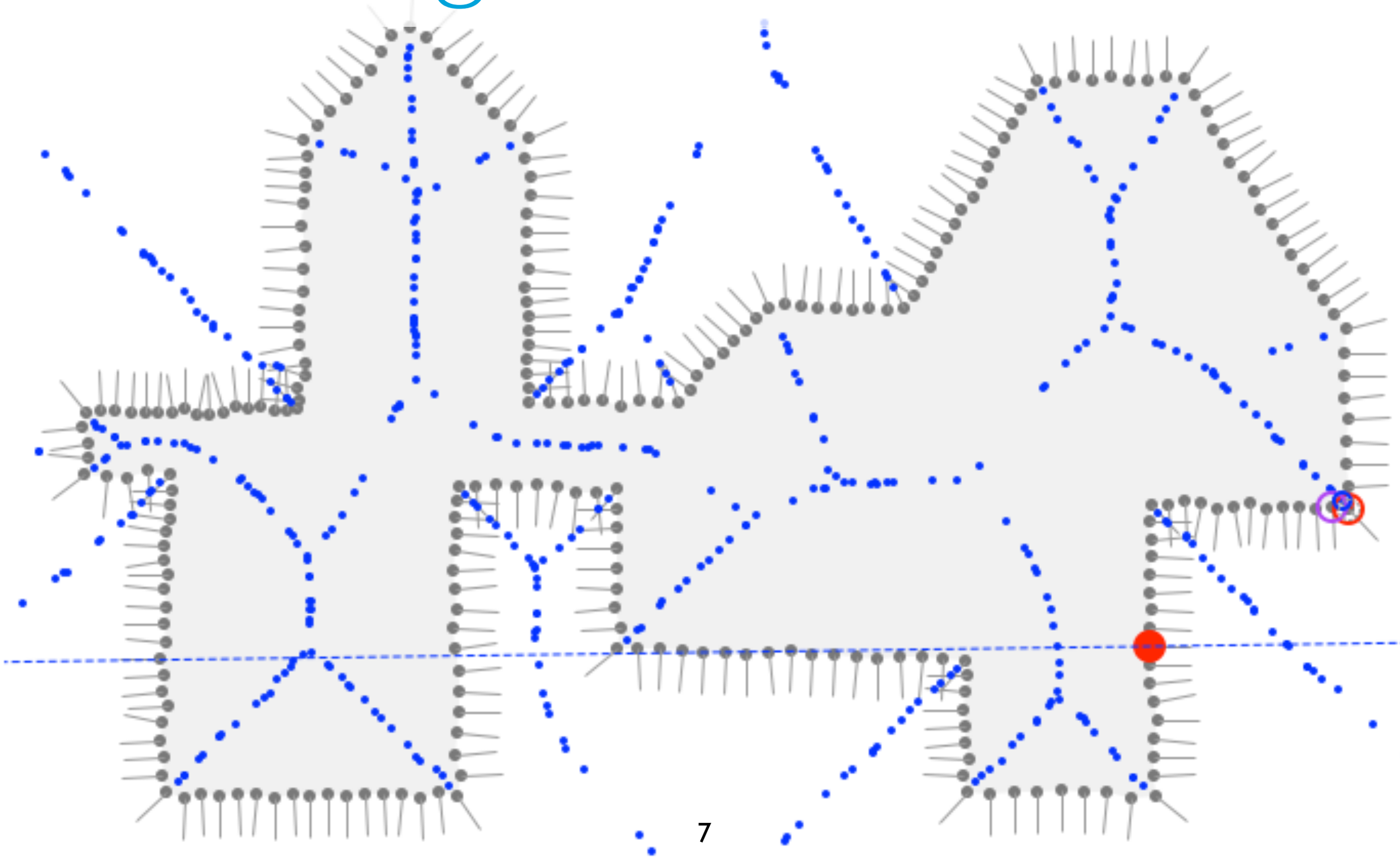


Dealing with noise

Even for noisy points, 'good' ball is computed



Dealing with noise

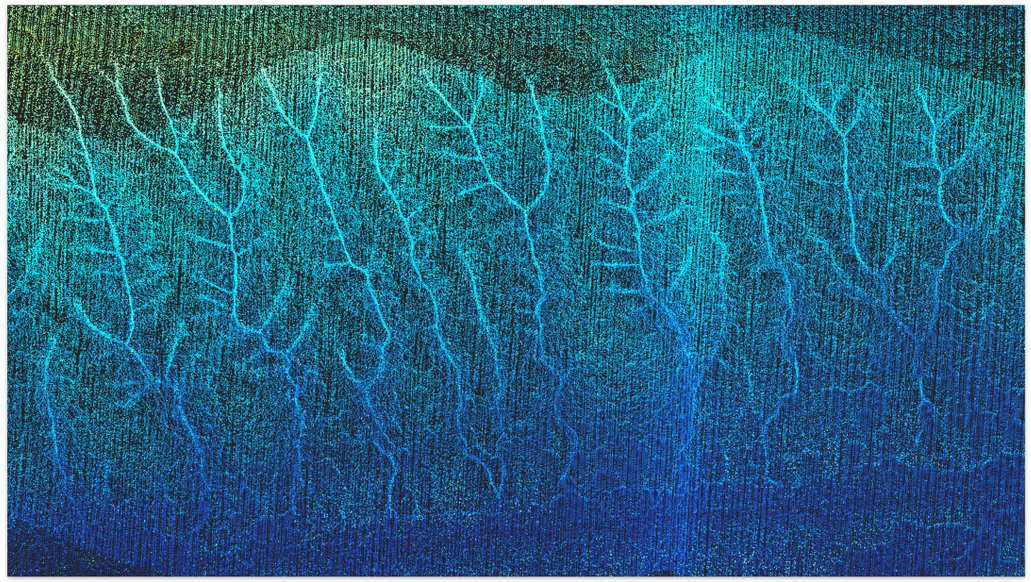


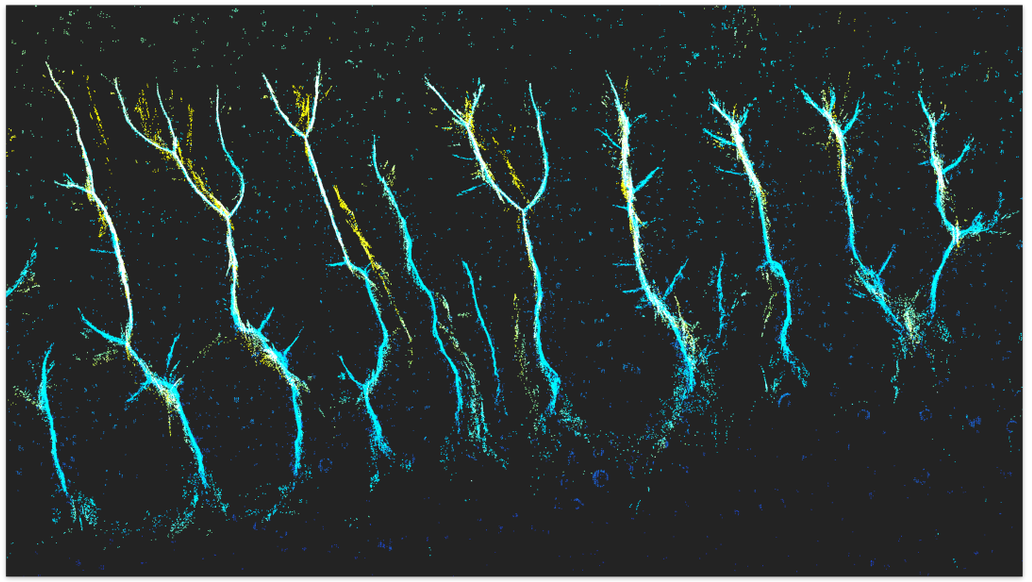
Dealing with noise

Without denoising

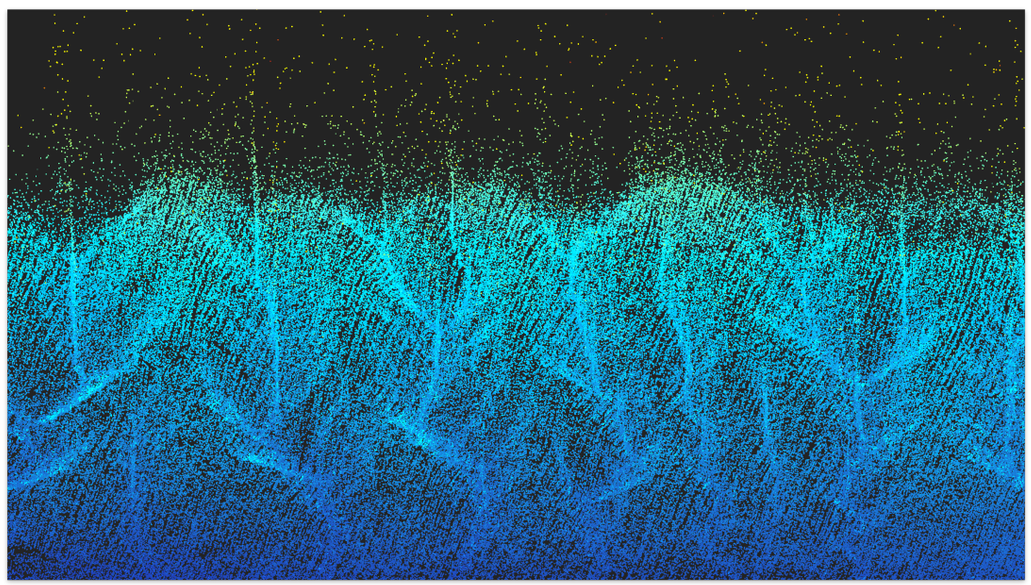
With denoising

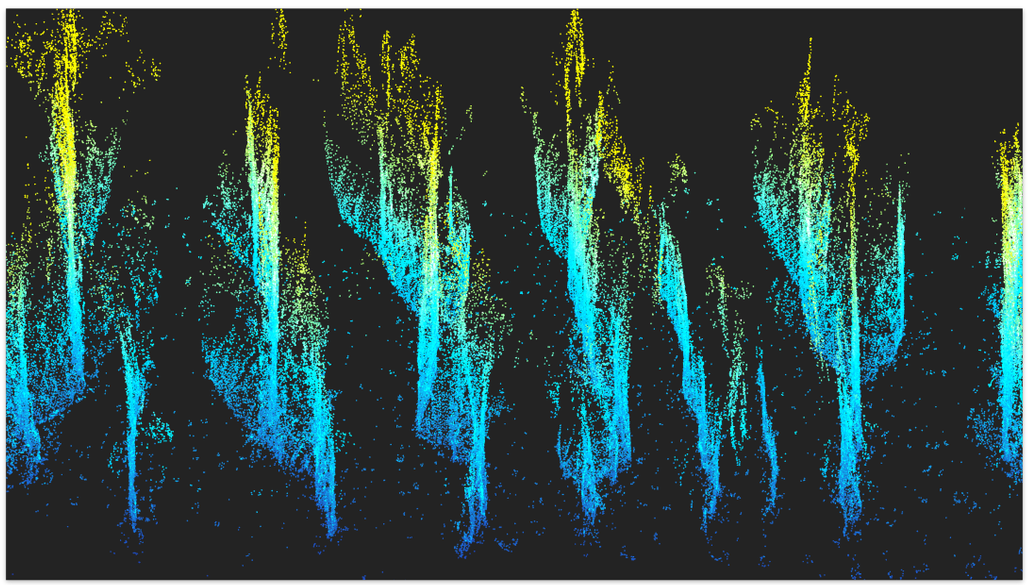
Top-view





Front-view





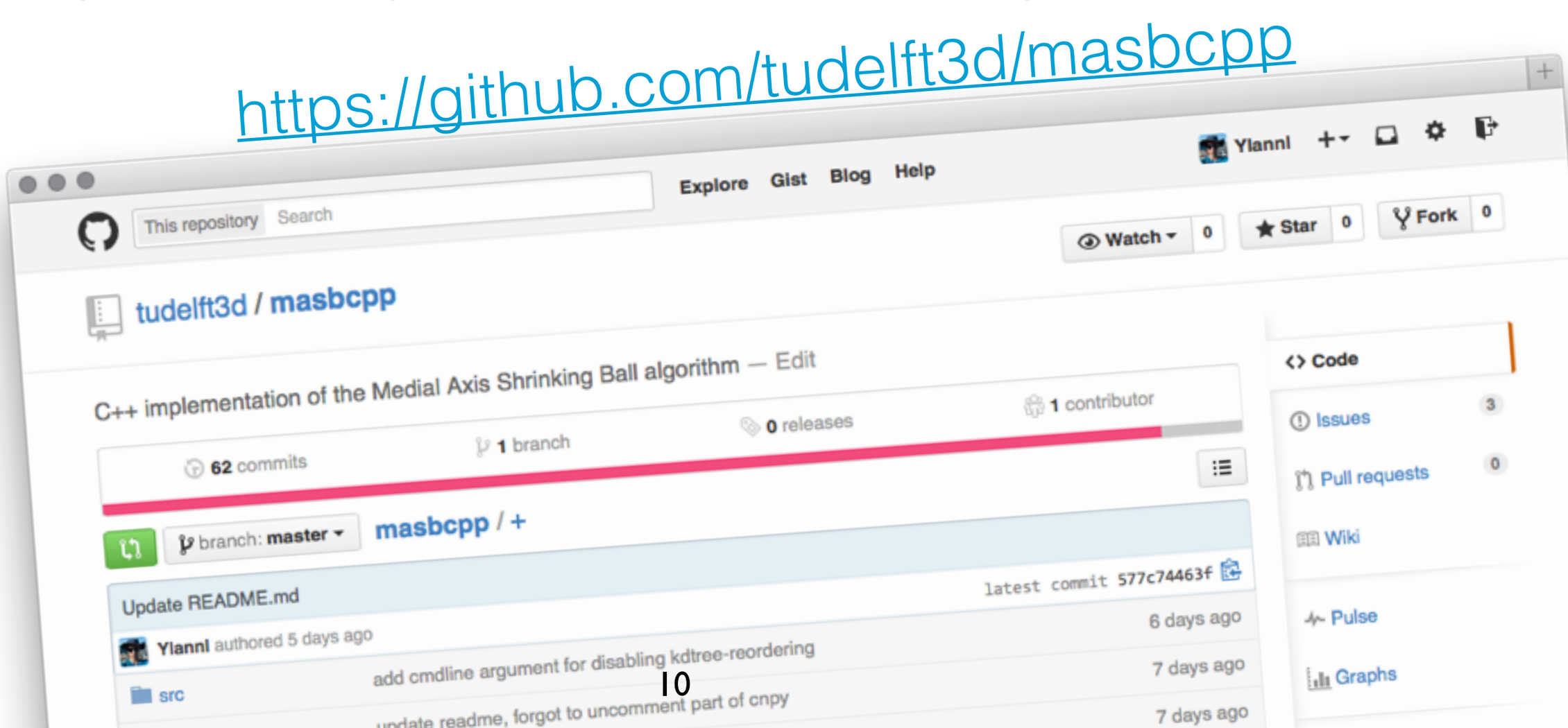
https://vimeo.com/127577620

(Re)written software

New

1. Own 3D visualiser
2. Efficient C++ implementation main algorithm (~250.000 points/s with 16-cores)

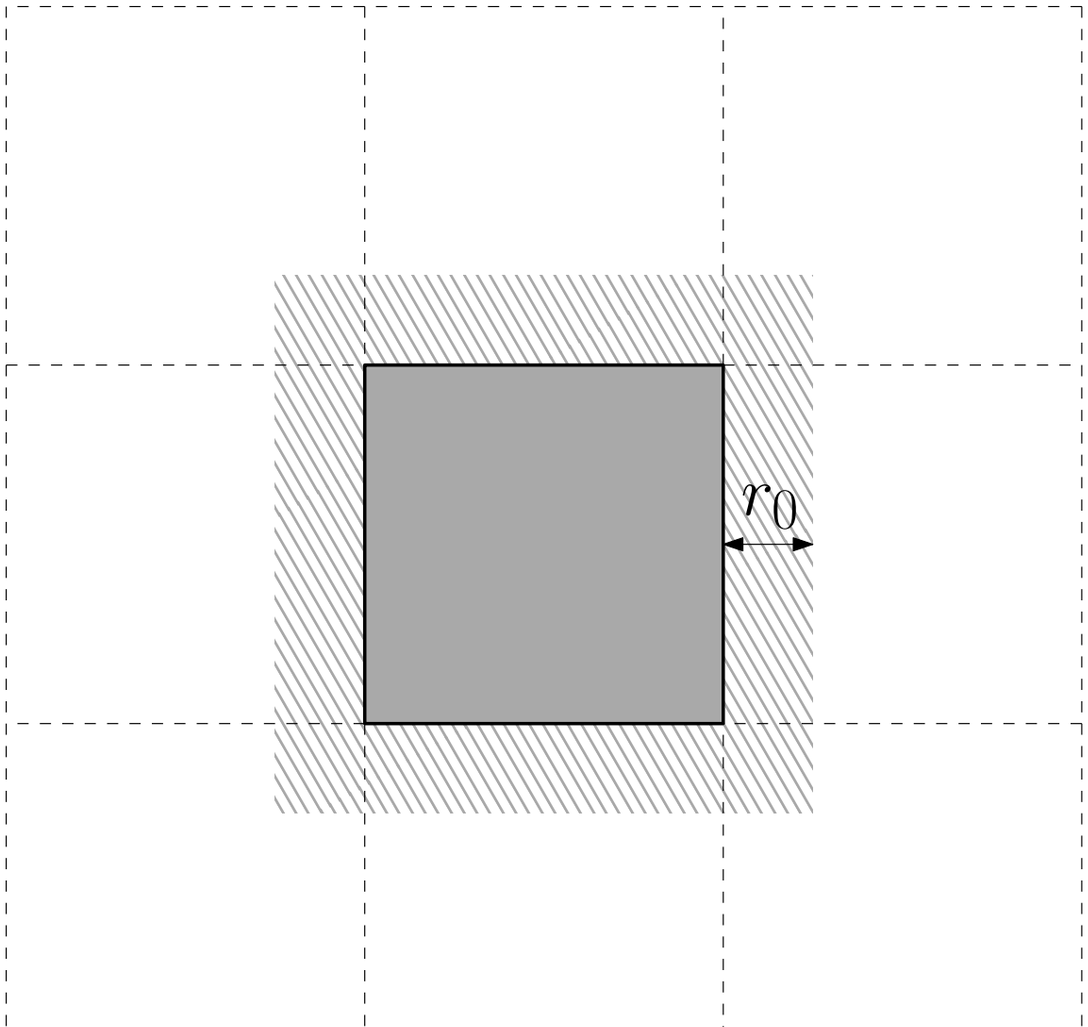
https://github.com/tudelft3d/masbcpp



Scalability

New

1. of computation (multiple cpu cores)
2. in size of dataset (using tiling)



Marco Lam
(MSc student)

Generalisation of point clouds

Simplification of LiDAR point clouds:

Reduce number of points while maintaining detail.

E.g. for creation 3DTOP10NL

image by Ron Nijhuis & Marc Post, Kadaster

Generalisation of point clouds

Simplificati point clouds:

Reduce num *maintaining detail.*

E.g. for creatio NL

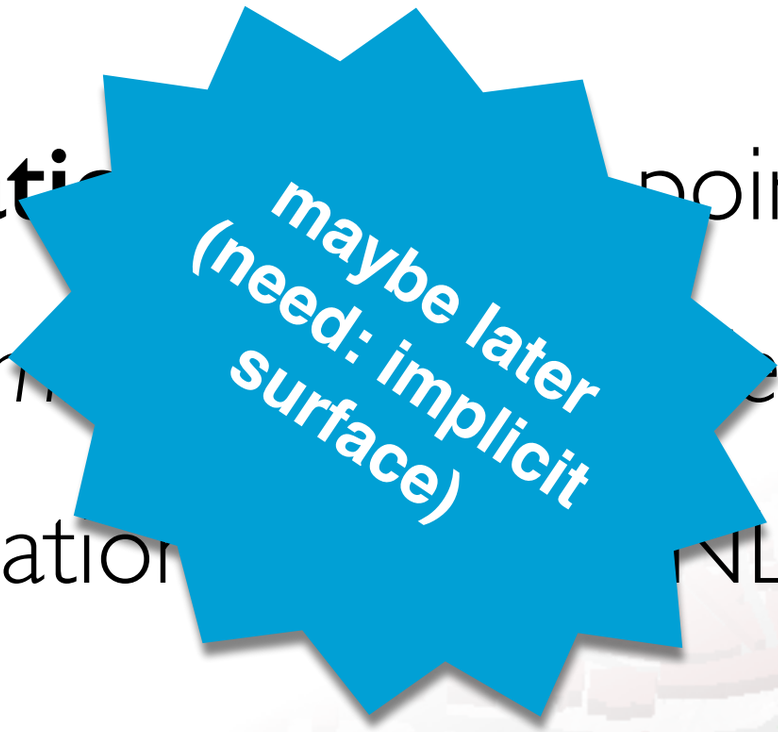
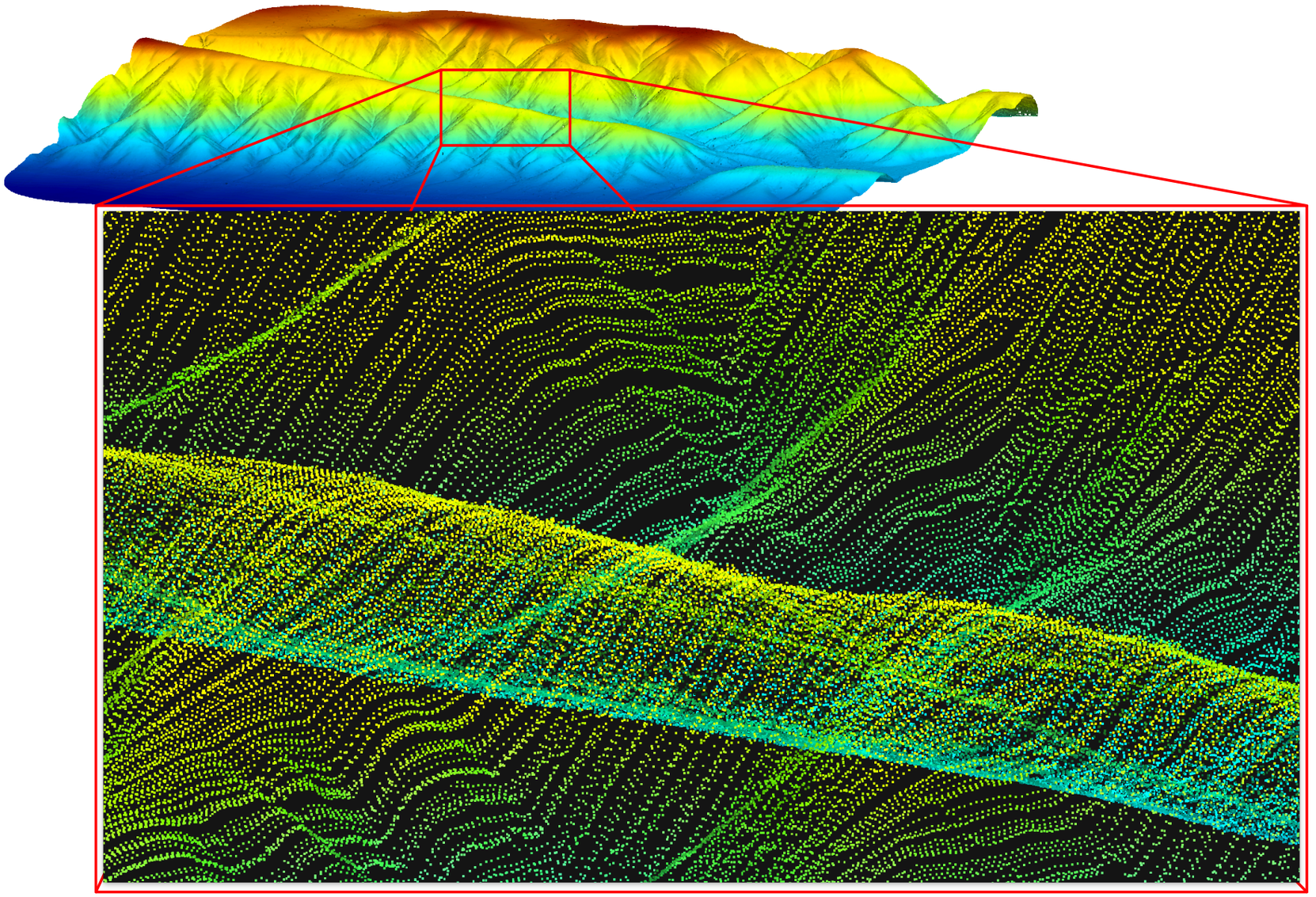


image by Ron Nijhuis & Marc Post, Kadaster

Generalisation of point clouds

New

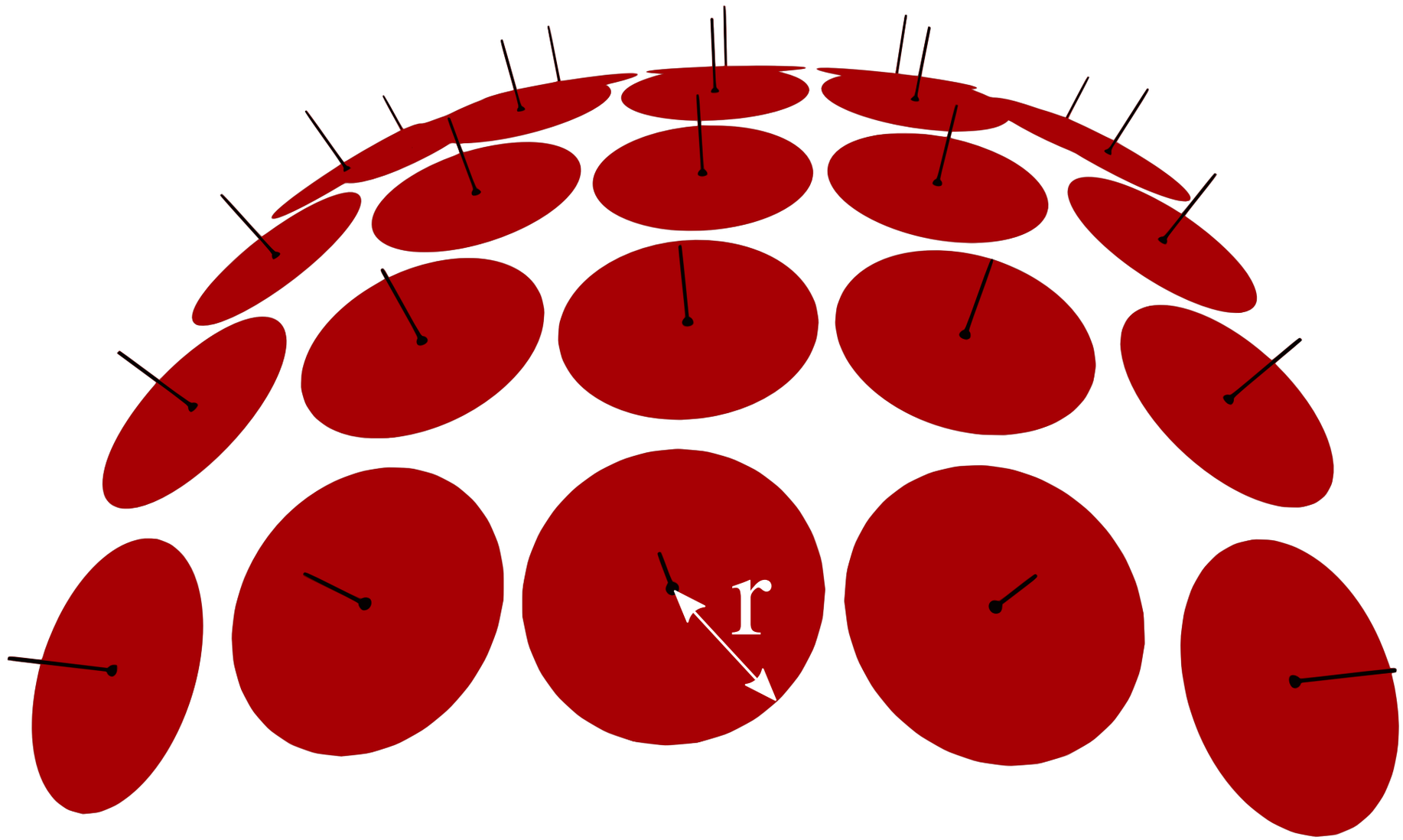
New focus: visualisation

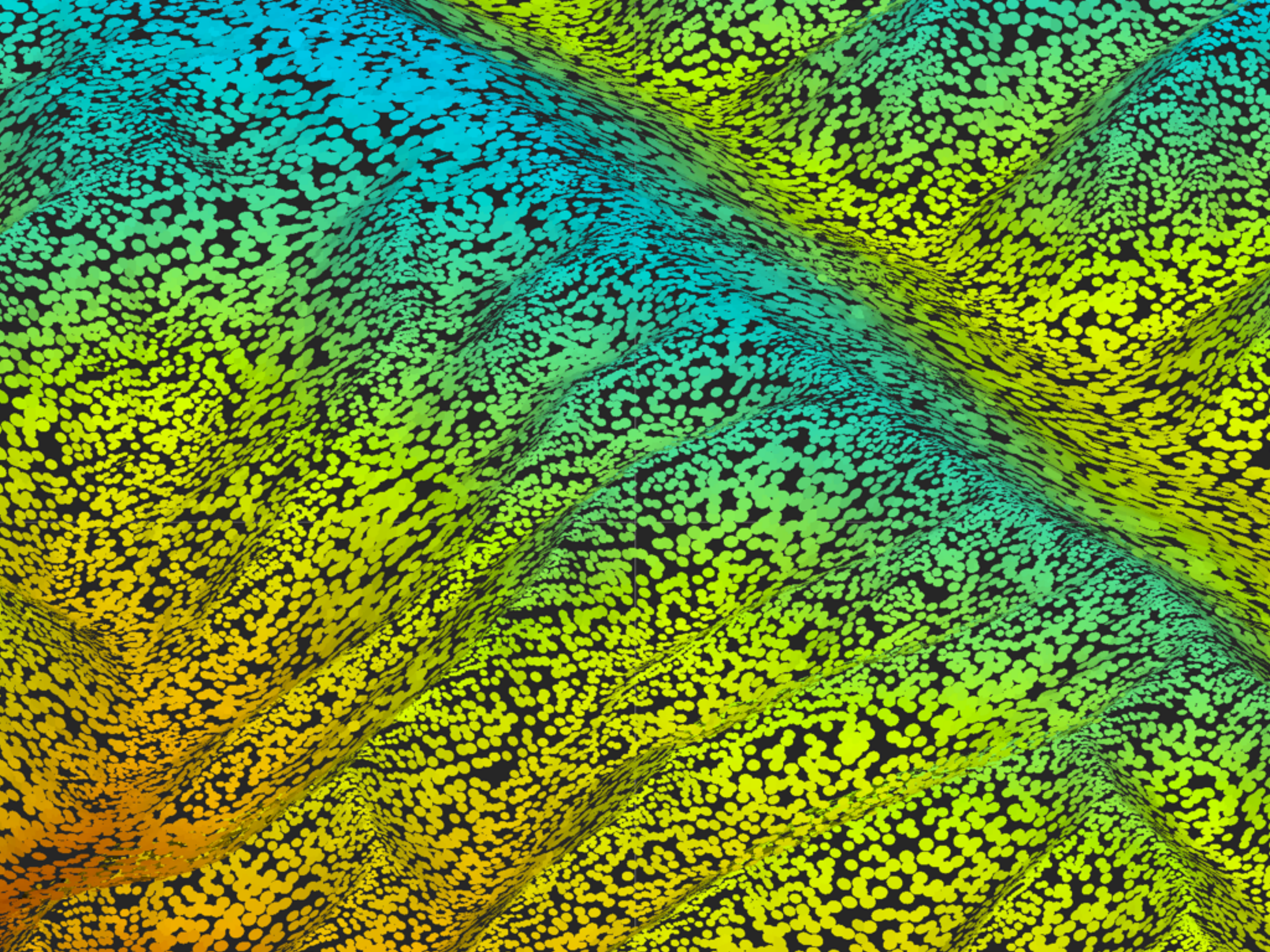


Generalisation of point clouds

New

Splatting





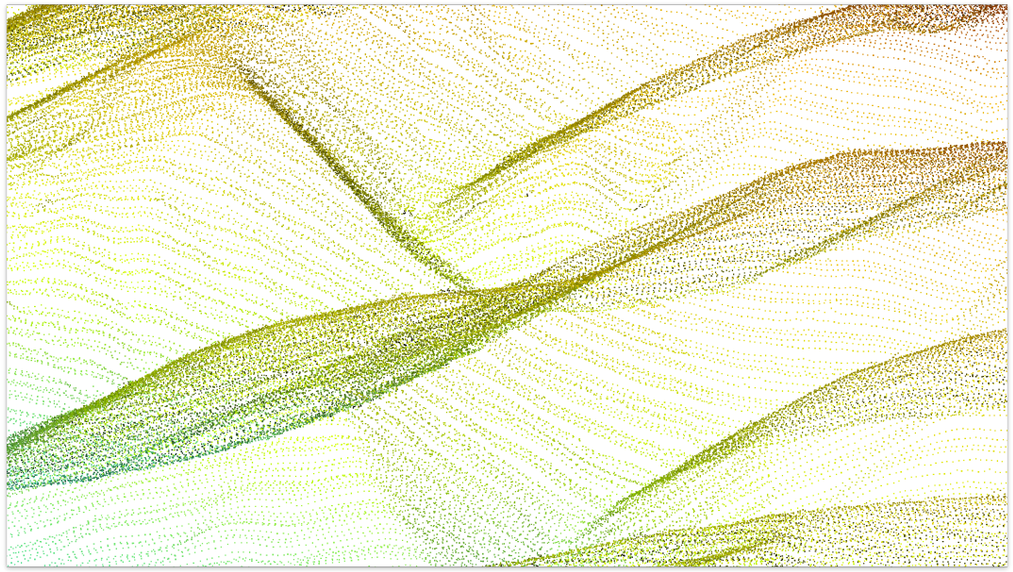
Generalisation of point clouds

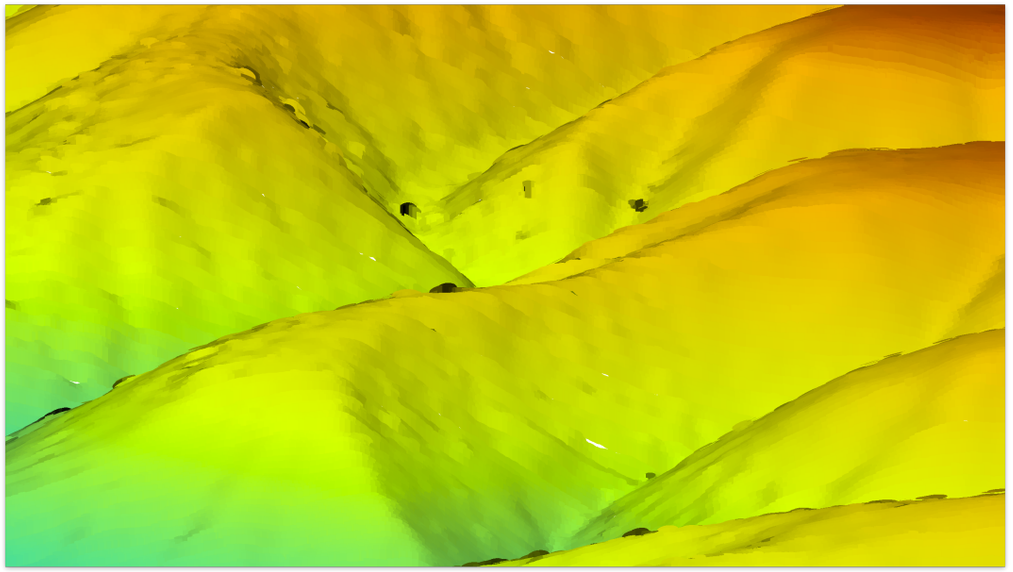
New

Simple points

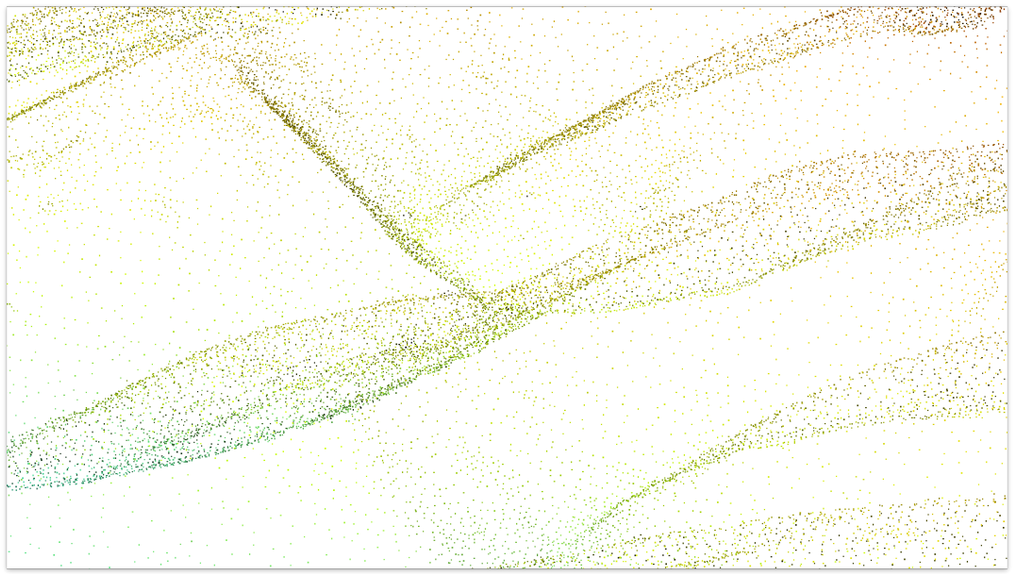
Splats

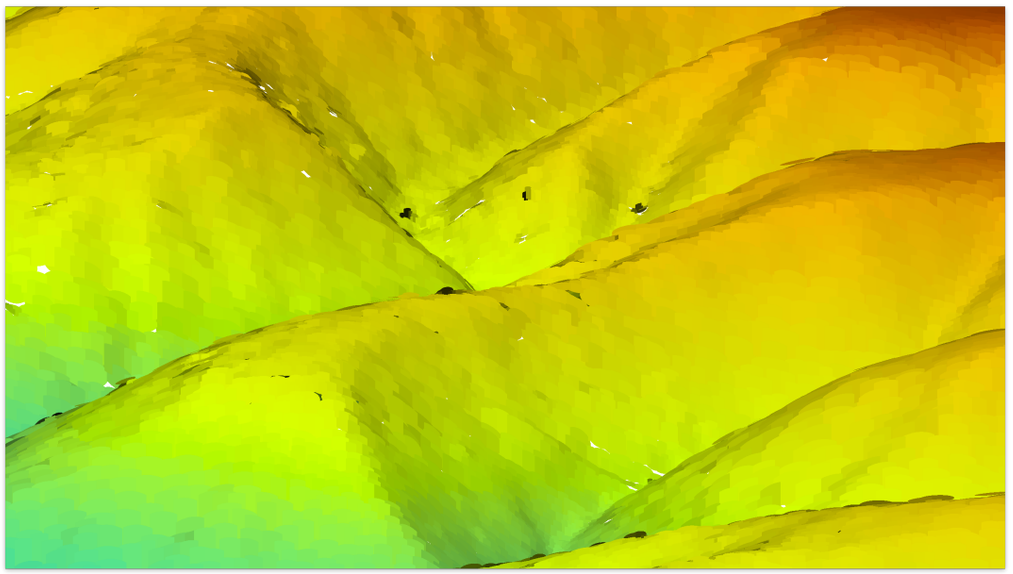
Full data





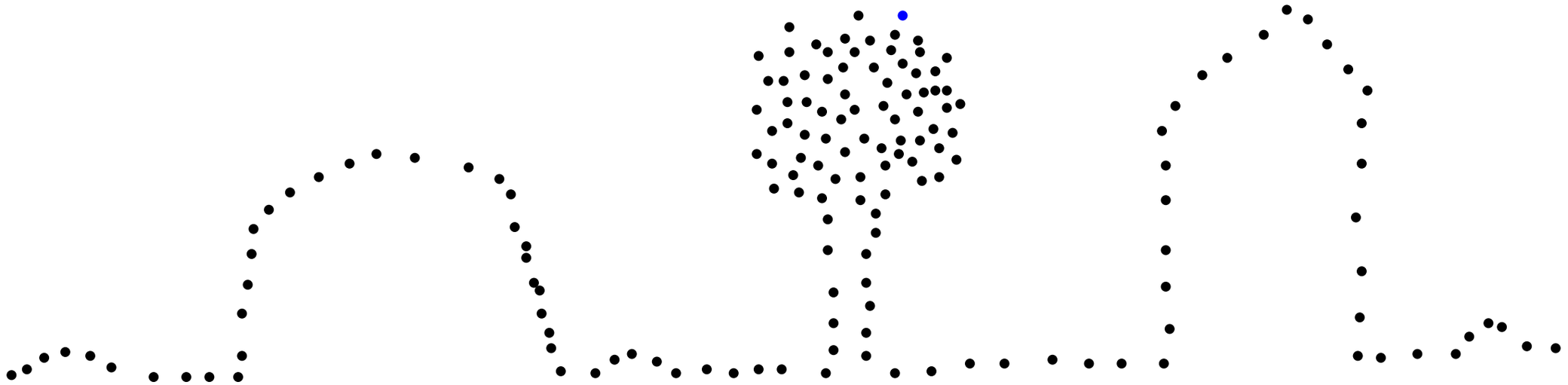
Simplified
(80% reduction)



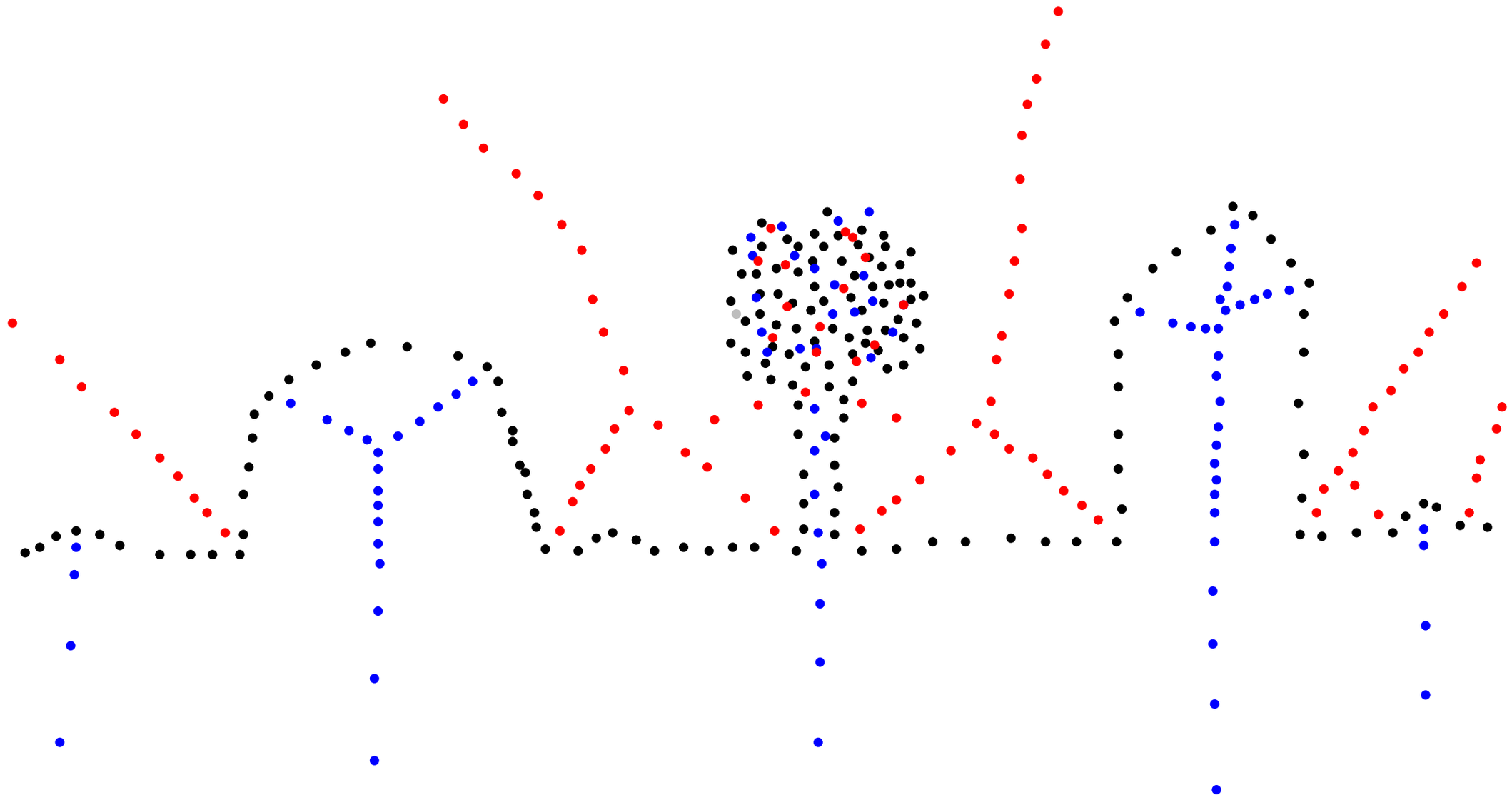


Current work

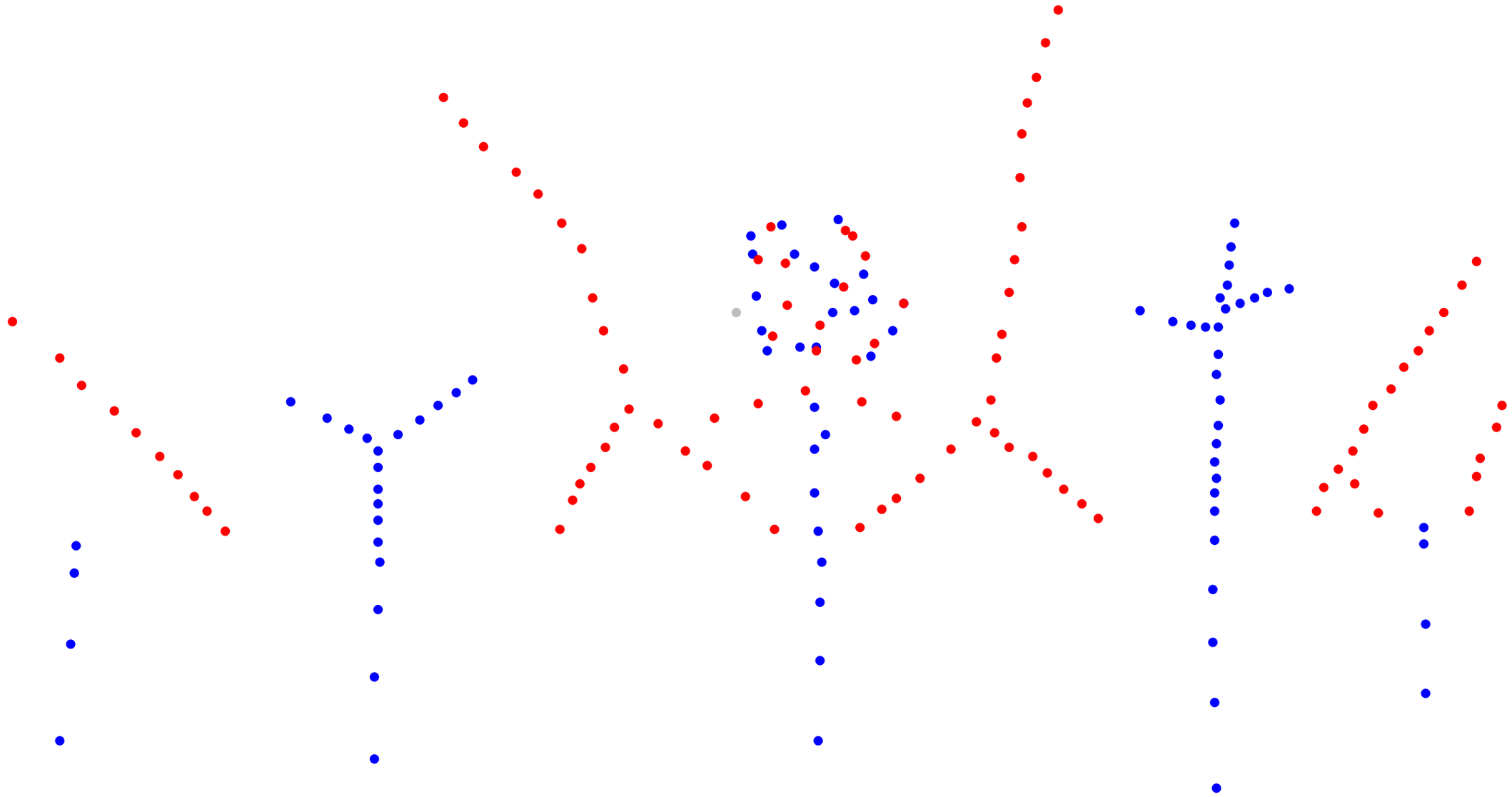
Obtaining MAT hierarchy



Obtaining MAT hierarchy



Obtaining MAT hierarchy



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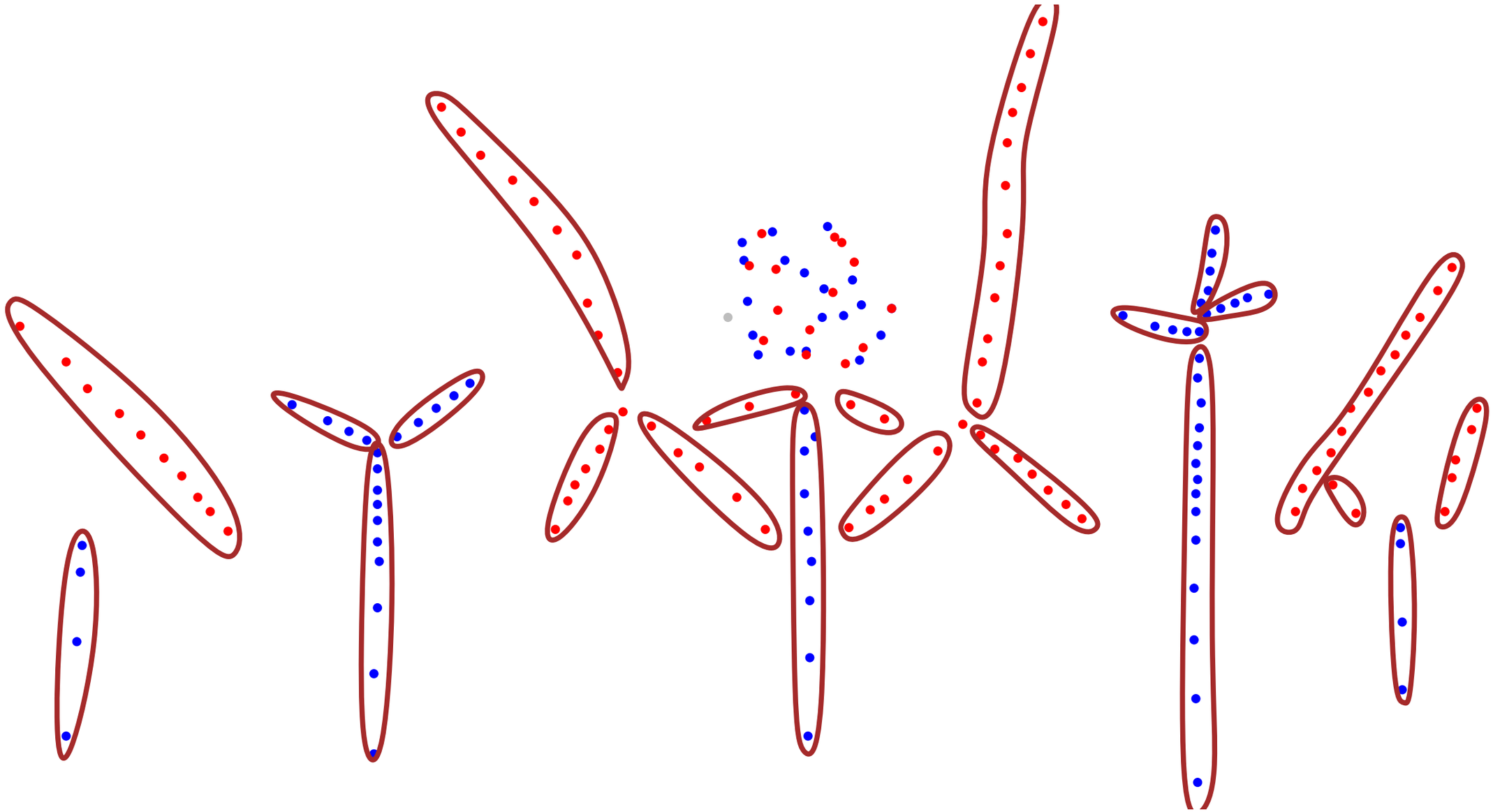

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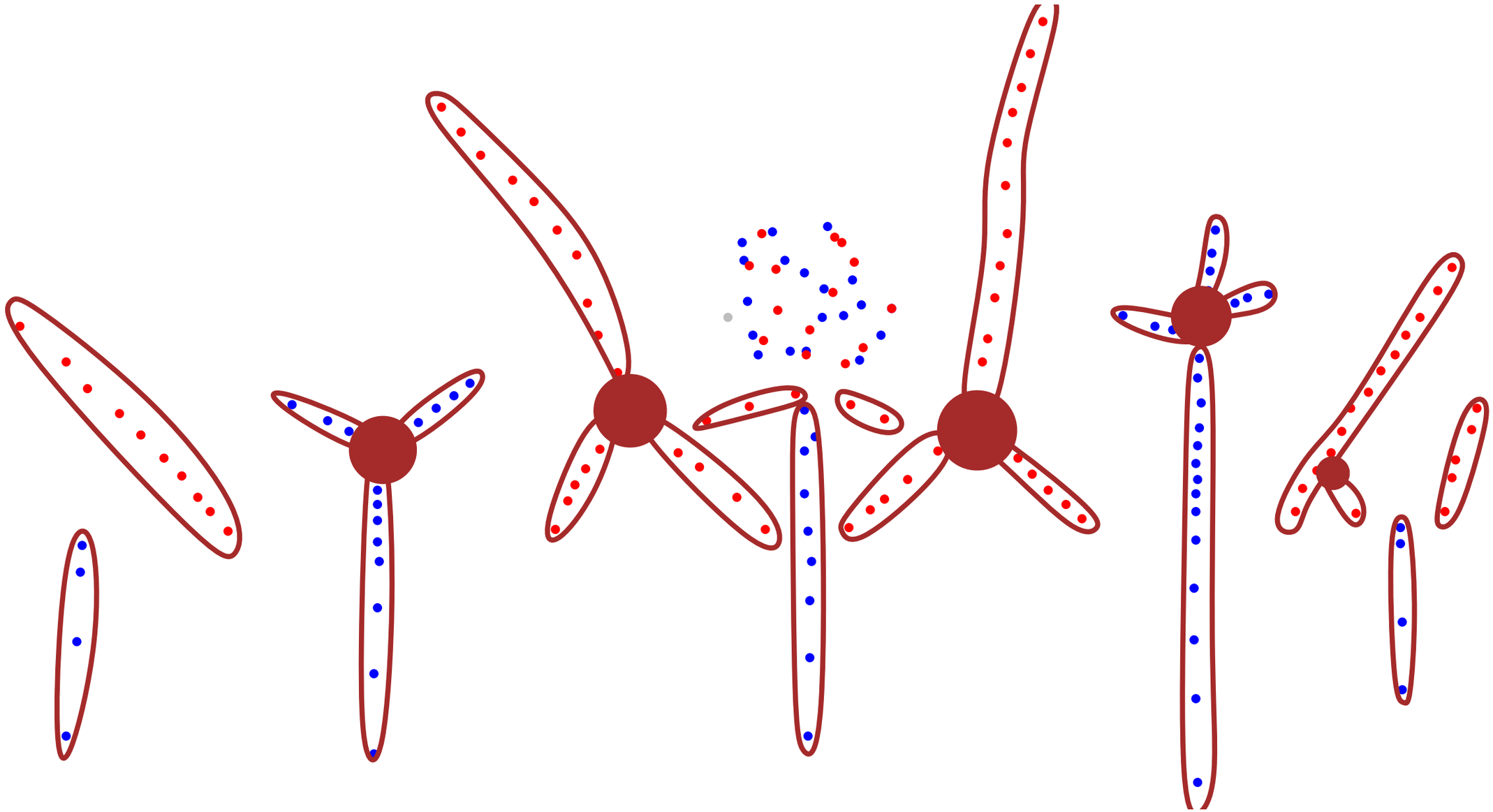
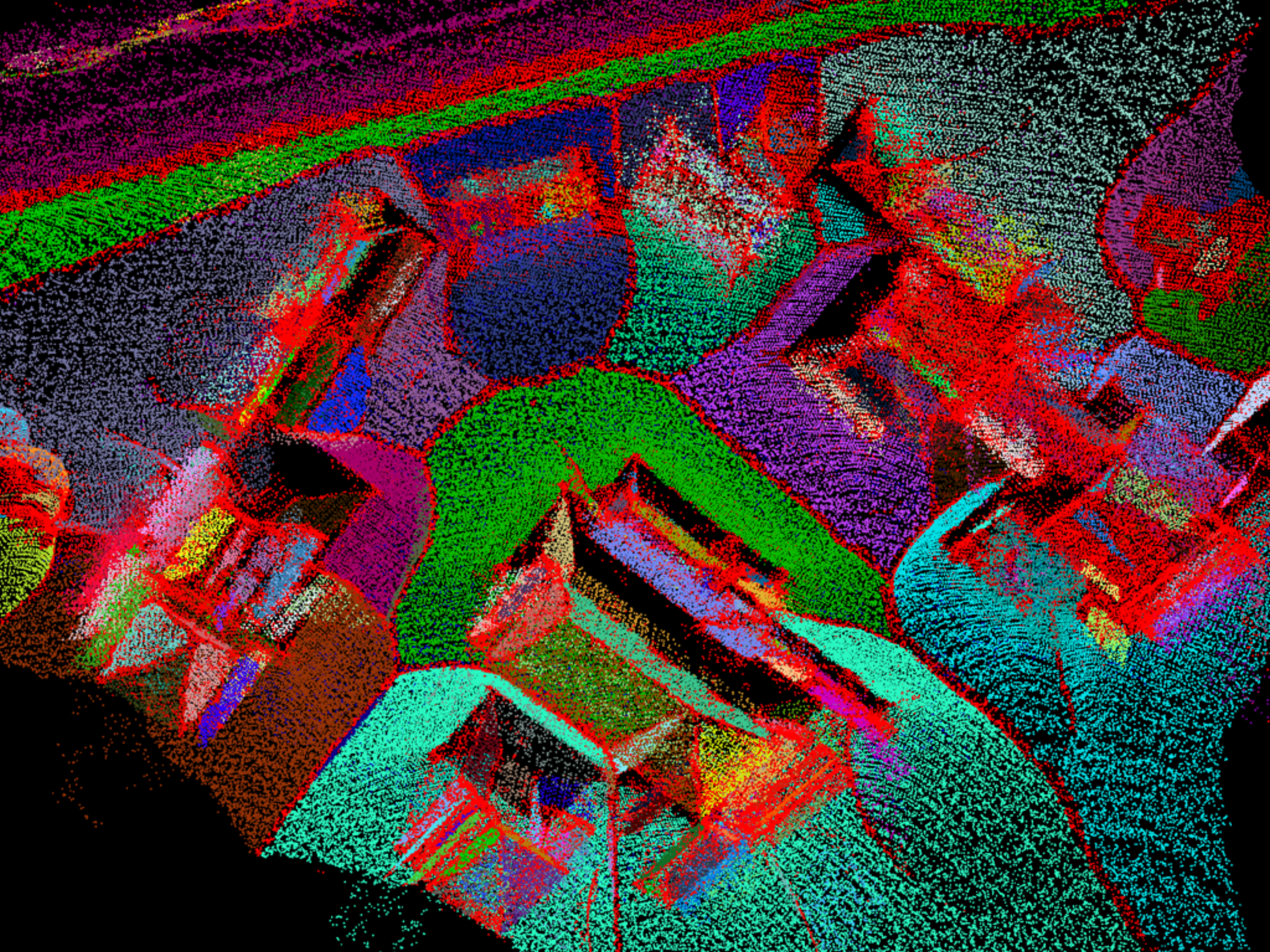


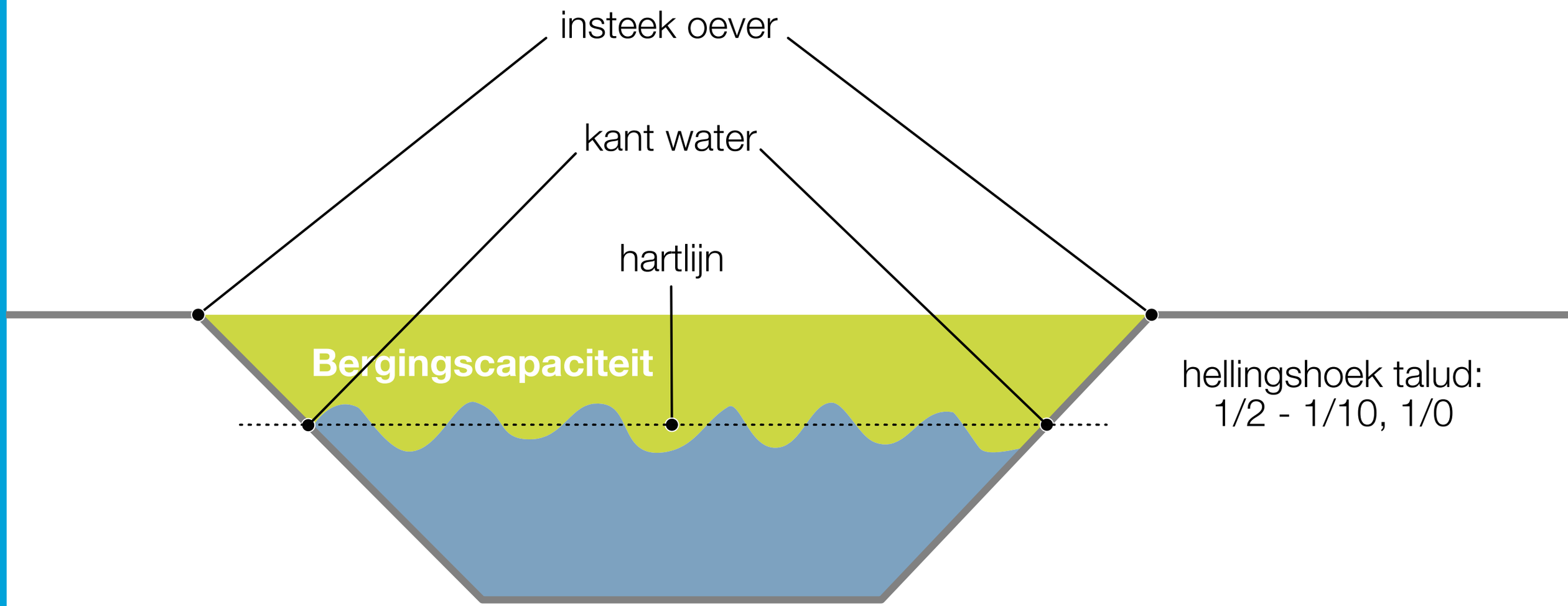


First use cases

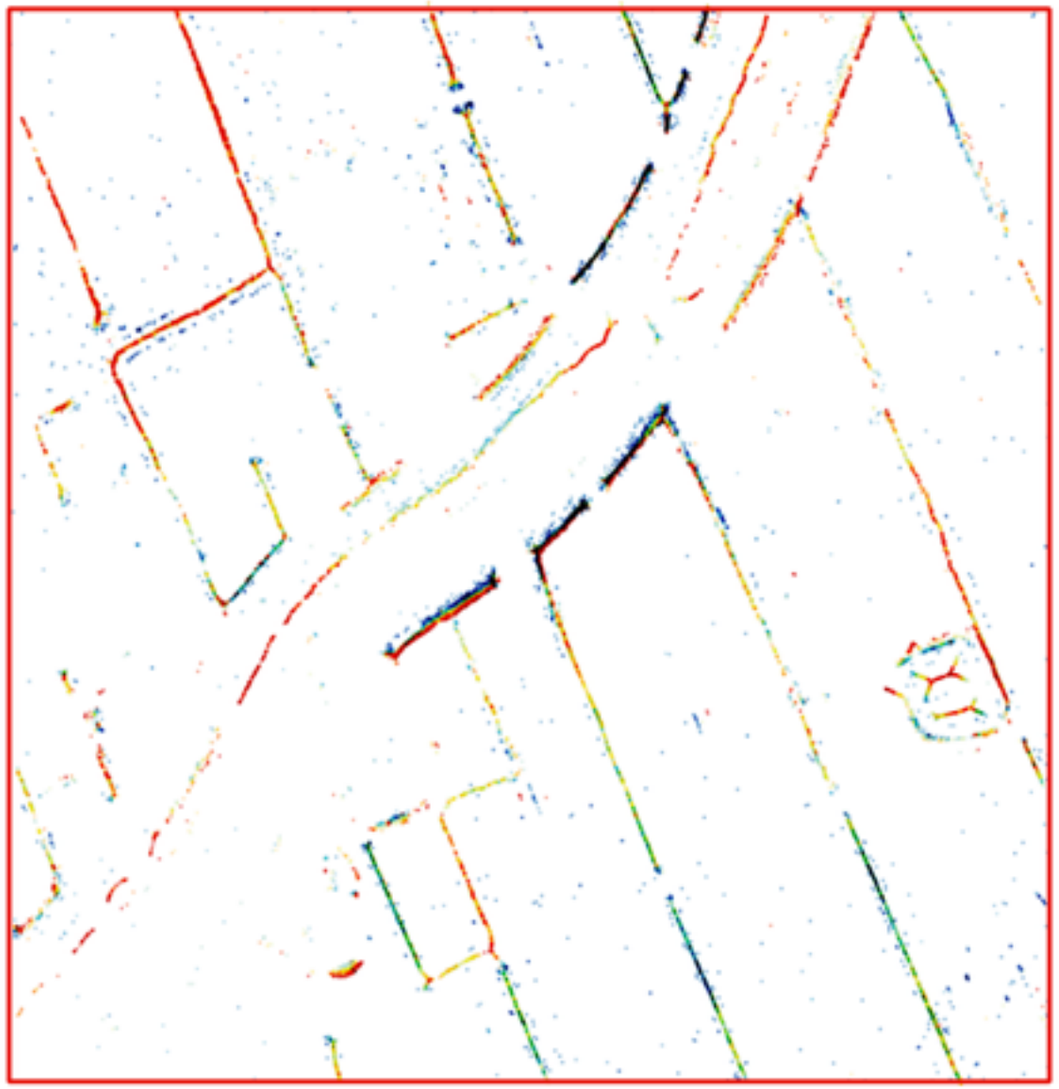
1. Detect `*watergangen*`
2. Detect (features of) buildings
   e.g. `*daklijnen*`

Watergangen

Use MAT to obtain 2D lines of watergang parameters



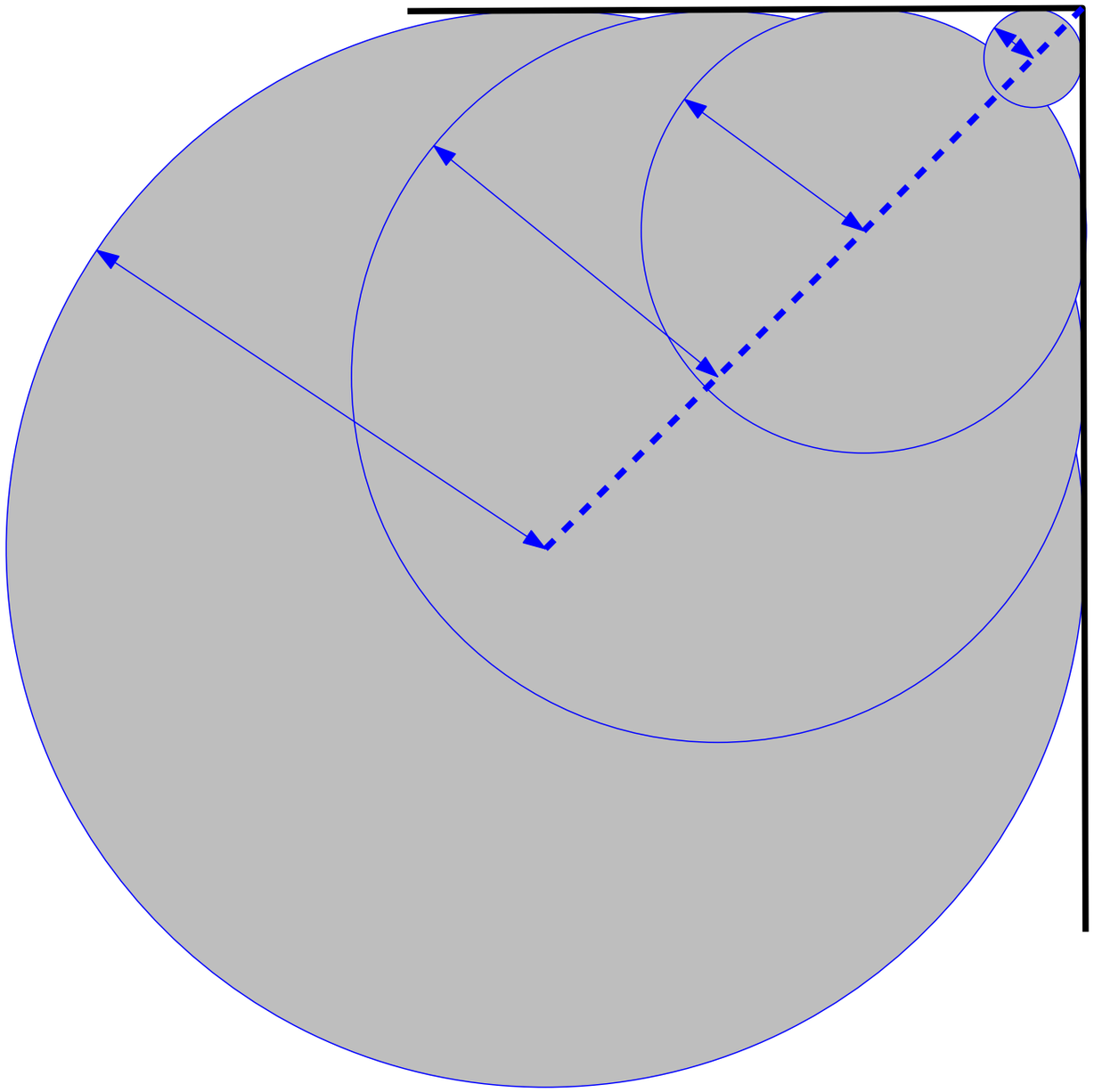
Watergangen



MAT points (AHN2)

as registered by Waterschap

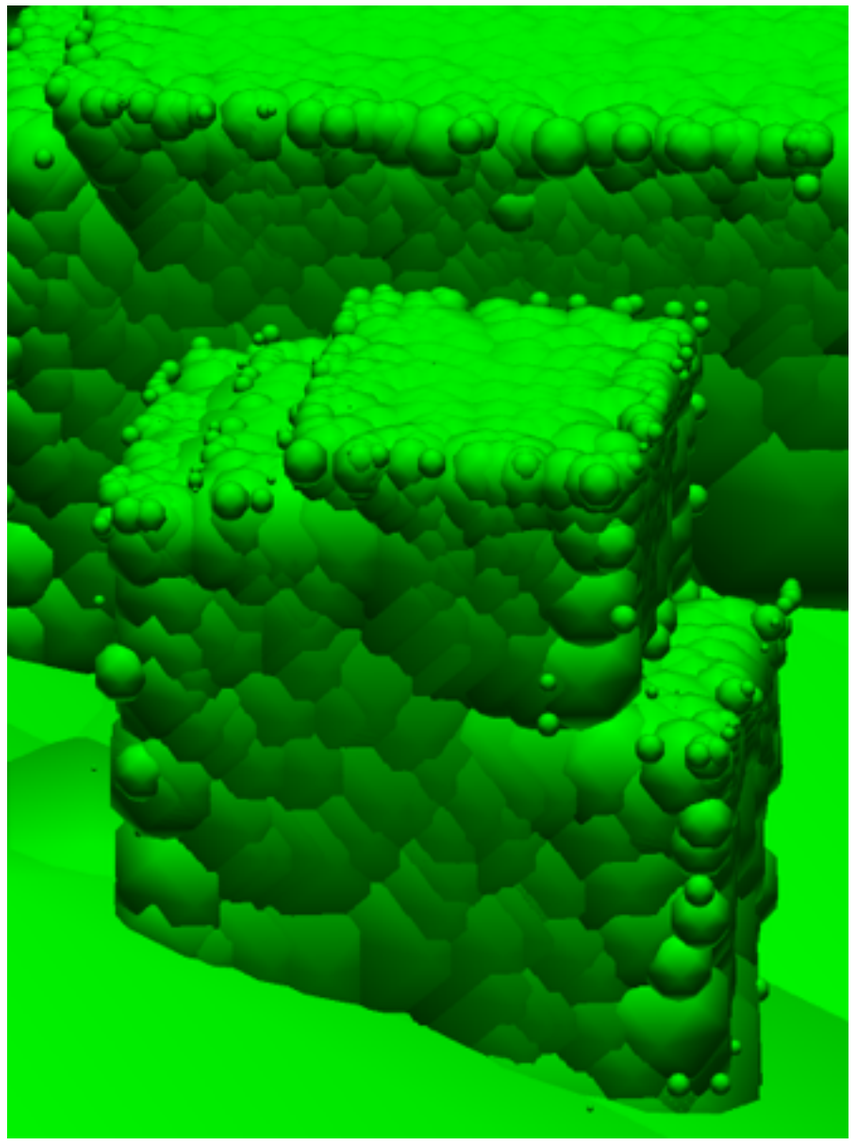
Daklijnen



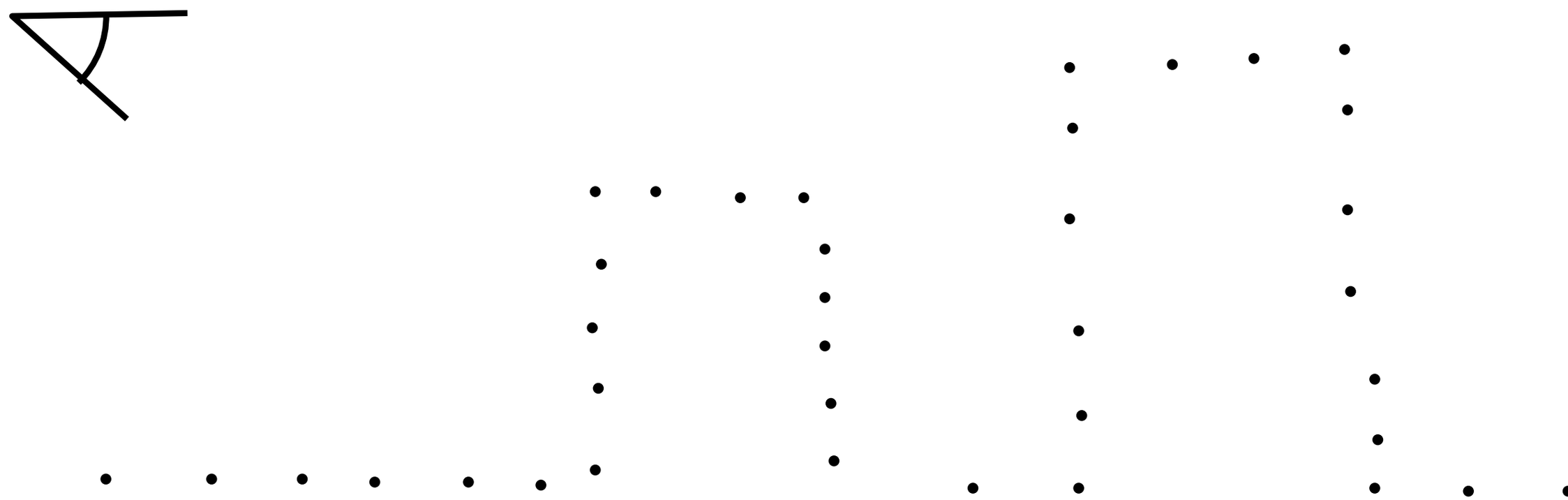
Future work

Building volume estimation

By union of medial balls



Line-of-sight/shadow analysis



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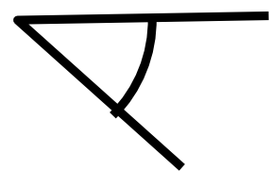

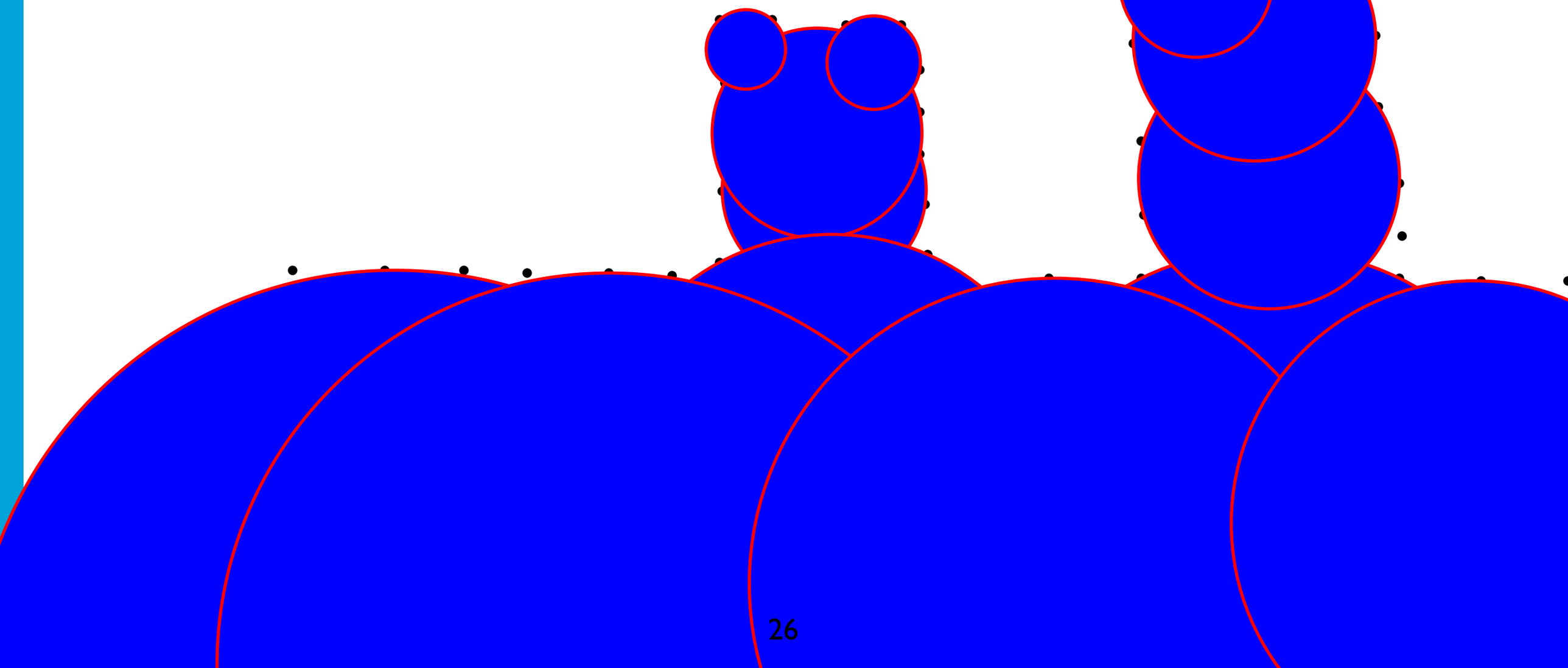

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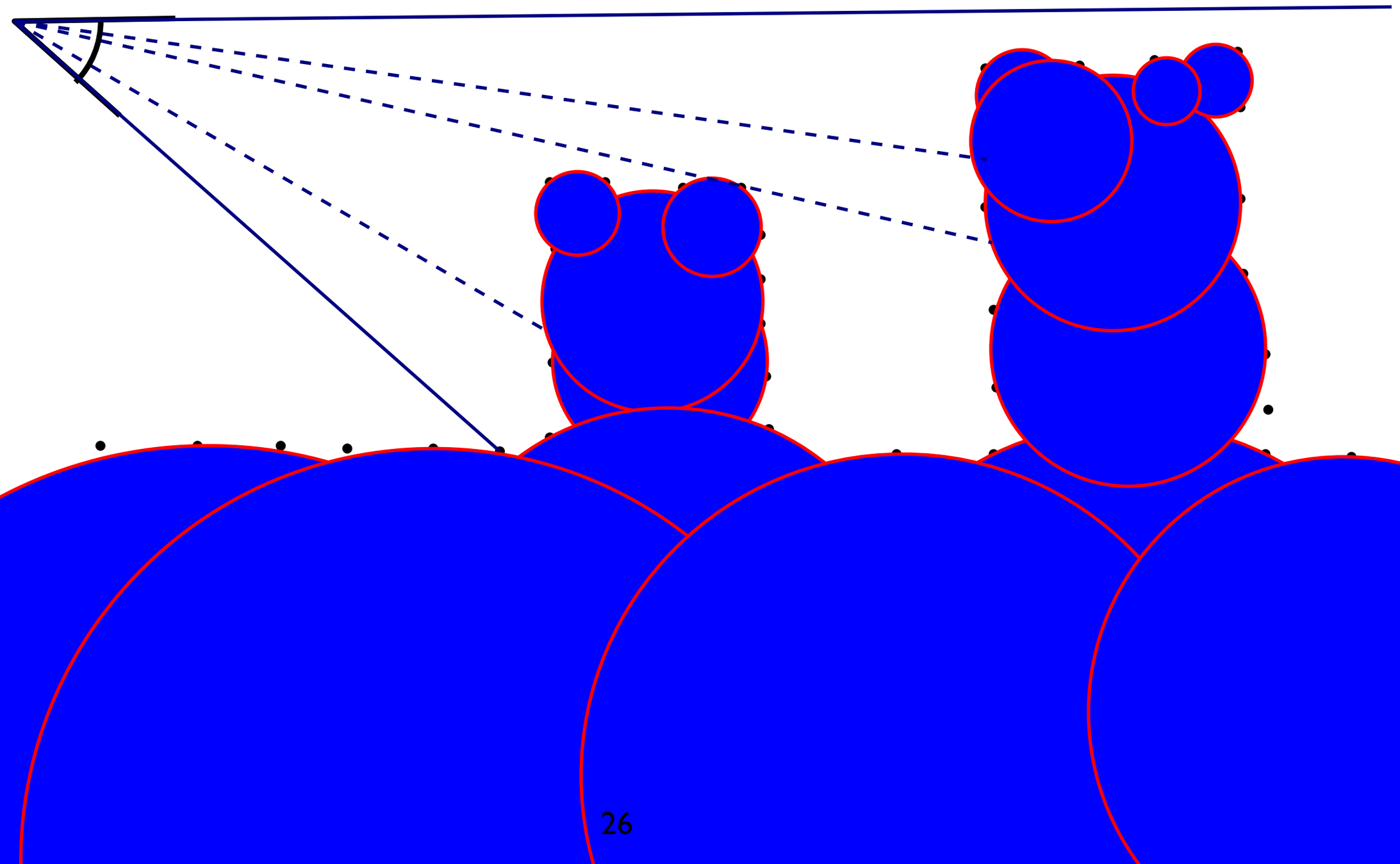

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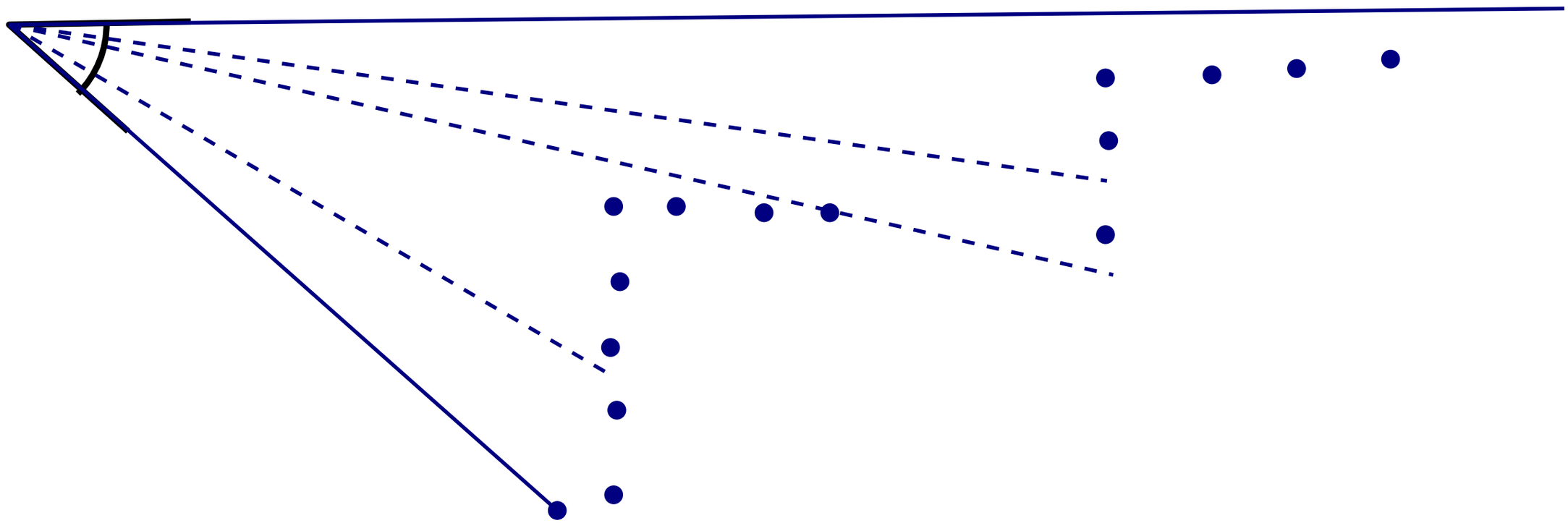

And more…

1. denoising point cloud
2. improve quality of normals in point cloud
3. object classification
4. …

Thank you!

TU Delft
3Dgeoinfo