

Affordable geo-localisation of humanitarian demining tools (mountable on K9, robot, hand-held device, etc.) in GNSS-denied environment

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Humanitarian demining tools



Fig. 1. Overview of the Gryphon system.



GNSS-denied environments



Approach





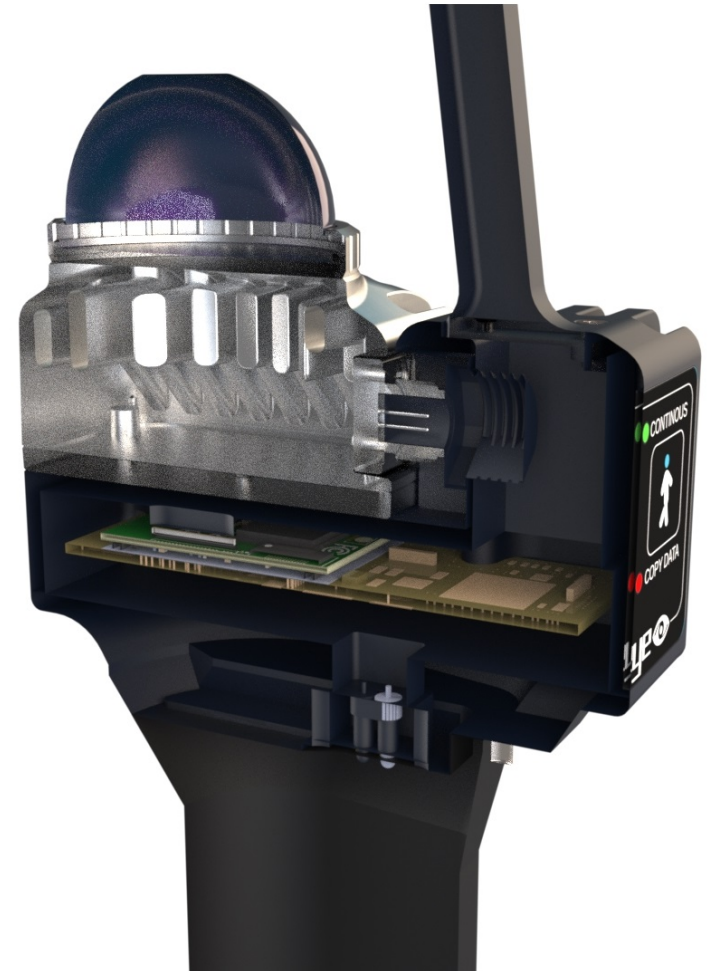
most affordable



affordable



not affordable





360 camera
GoPro MAX

GNSS + RTK
UBLOX

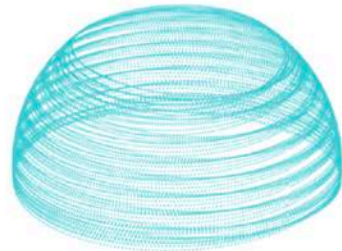
LIDAR
LIVOXMID-360

GRIP WITH BATTERY
DJI RONIN

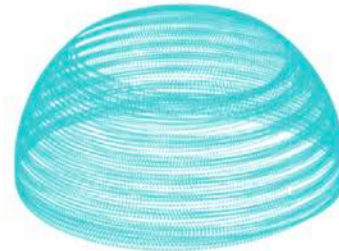
Non repetitive scanning pattern (LiDAR Livox MID360)



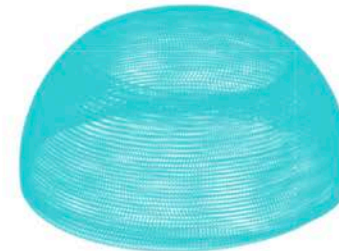
0.1 s



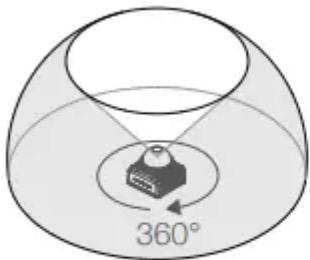
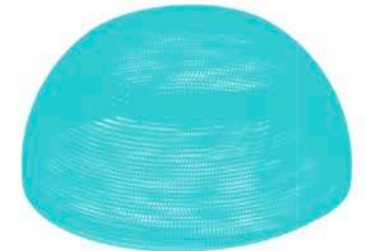
0.2 s



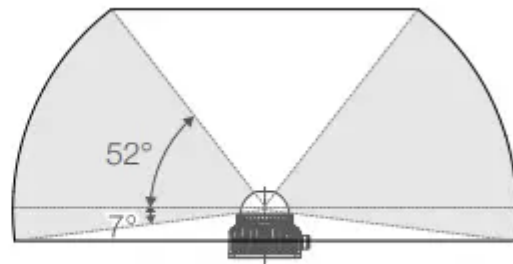
0.5 s



1 s



Horizontal



Vertical

RANGE: 40m 10% reflectivity, 70m 80% reflectivity

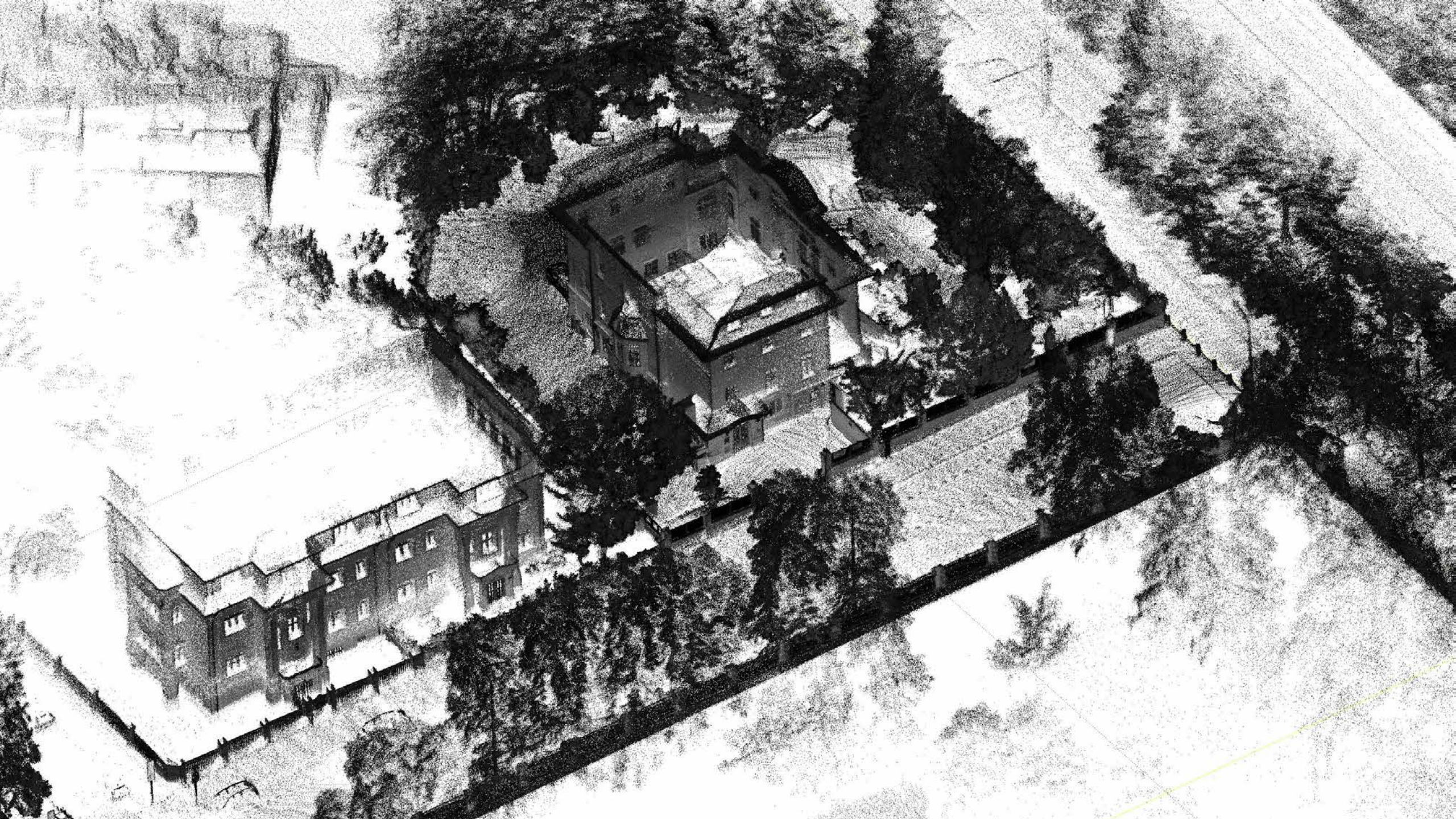
Distance Random Error: 3cm

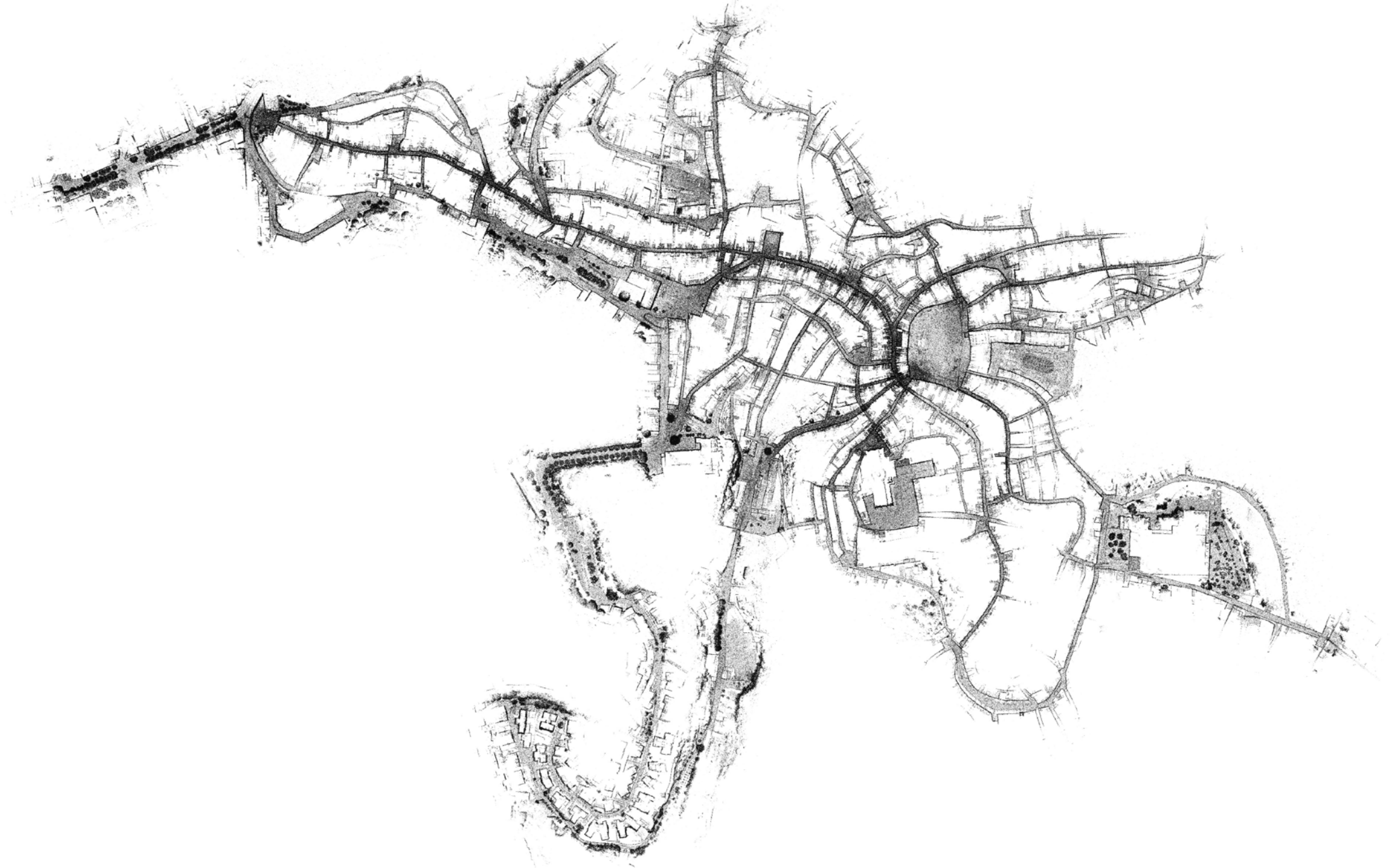
Point Rate: 200.000 points per second

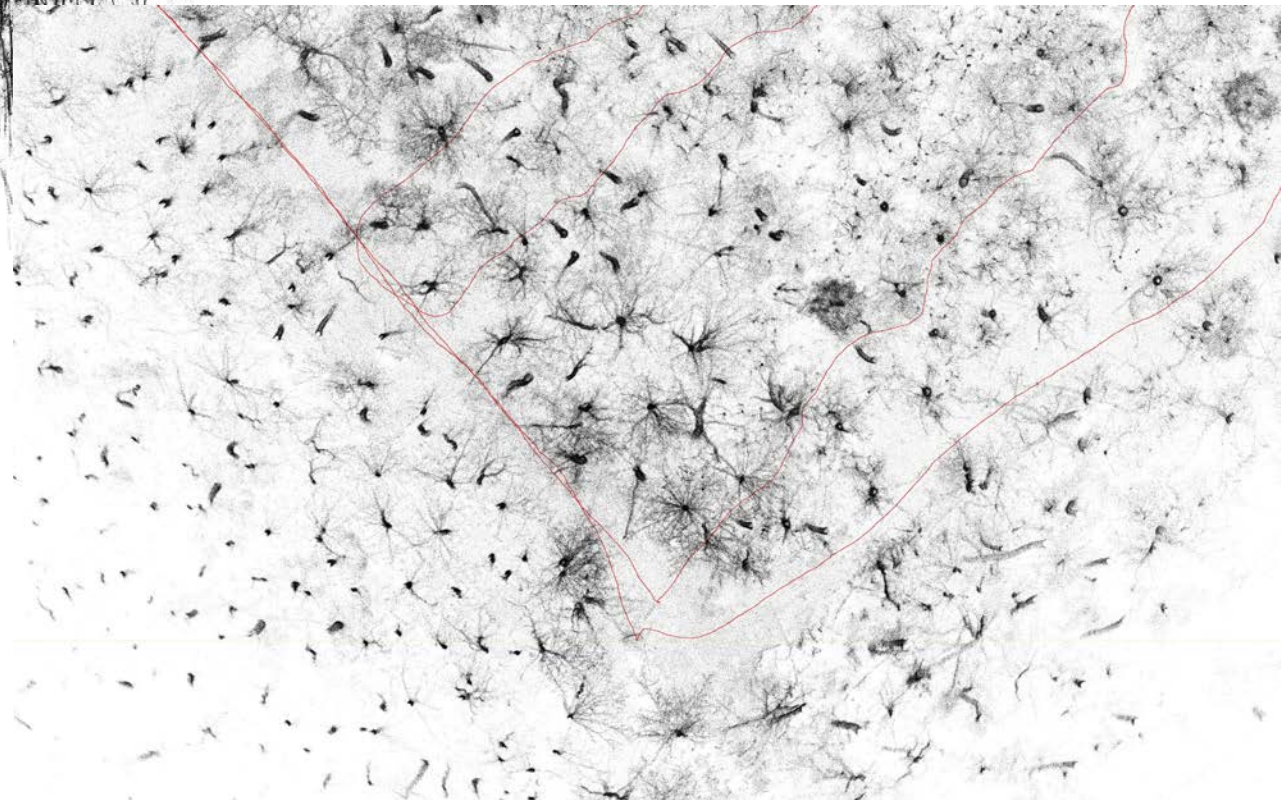
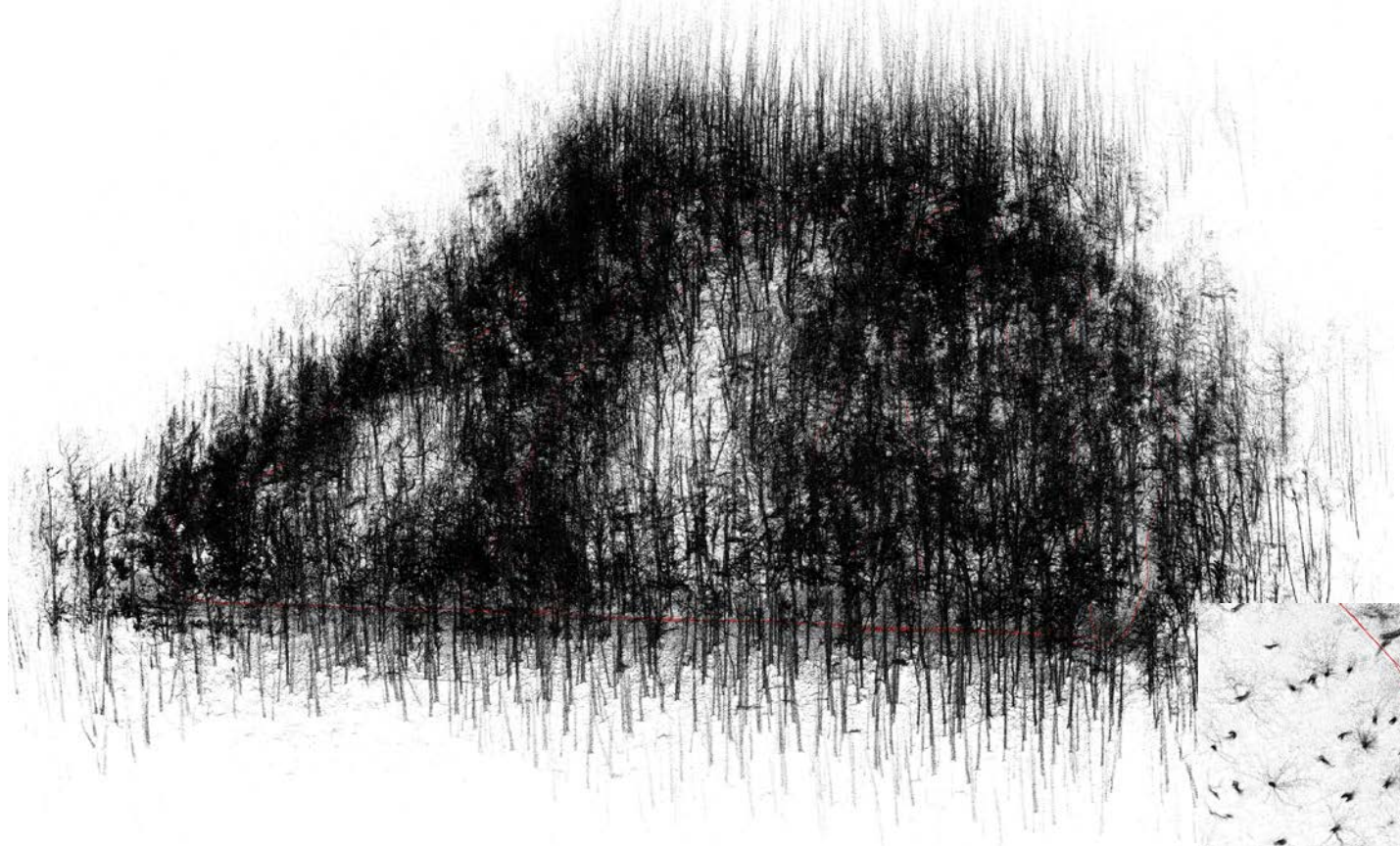
Weight: 265g

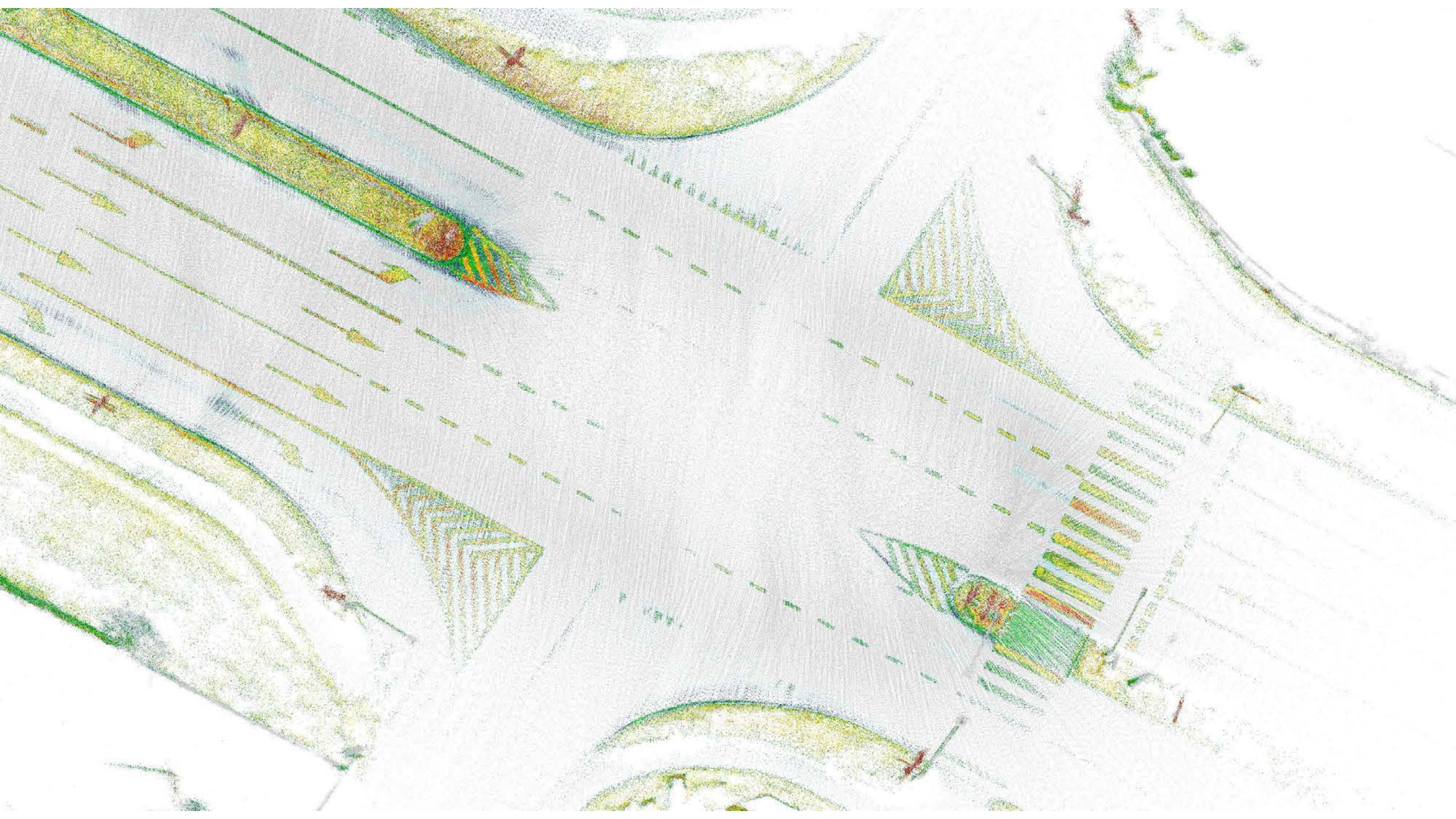
Laser Safety: Class 1 (IEC 60825-1:2014) (safe for eyes)



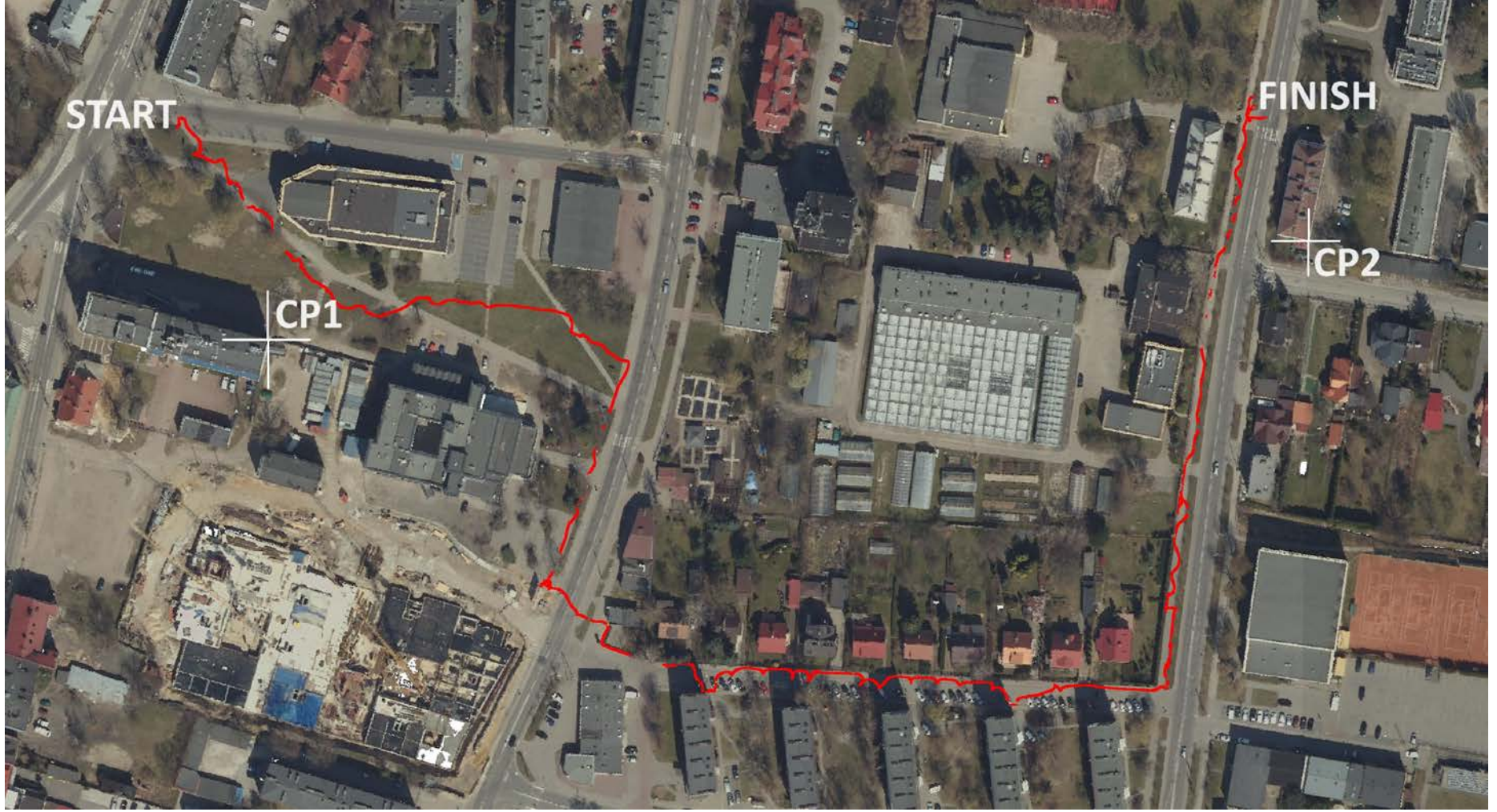


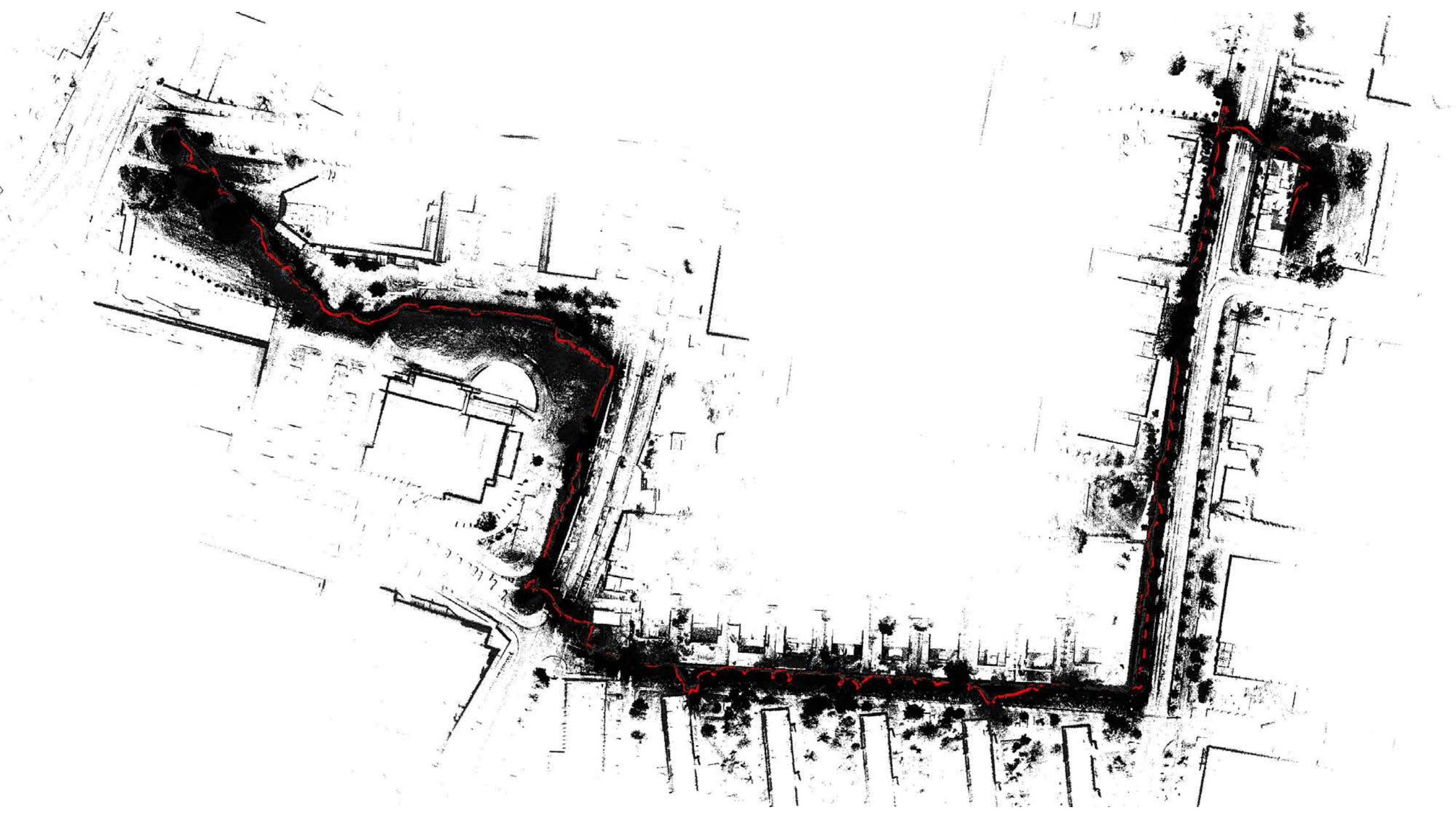


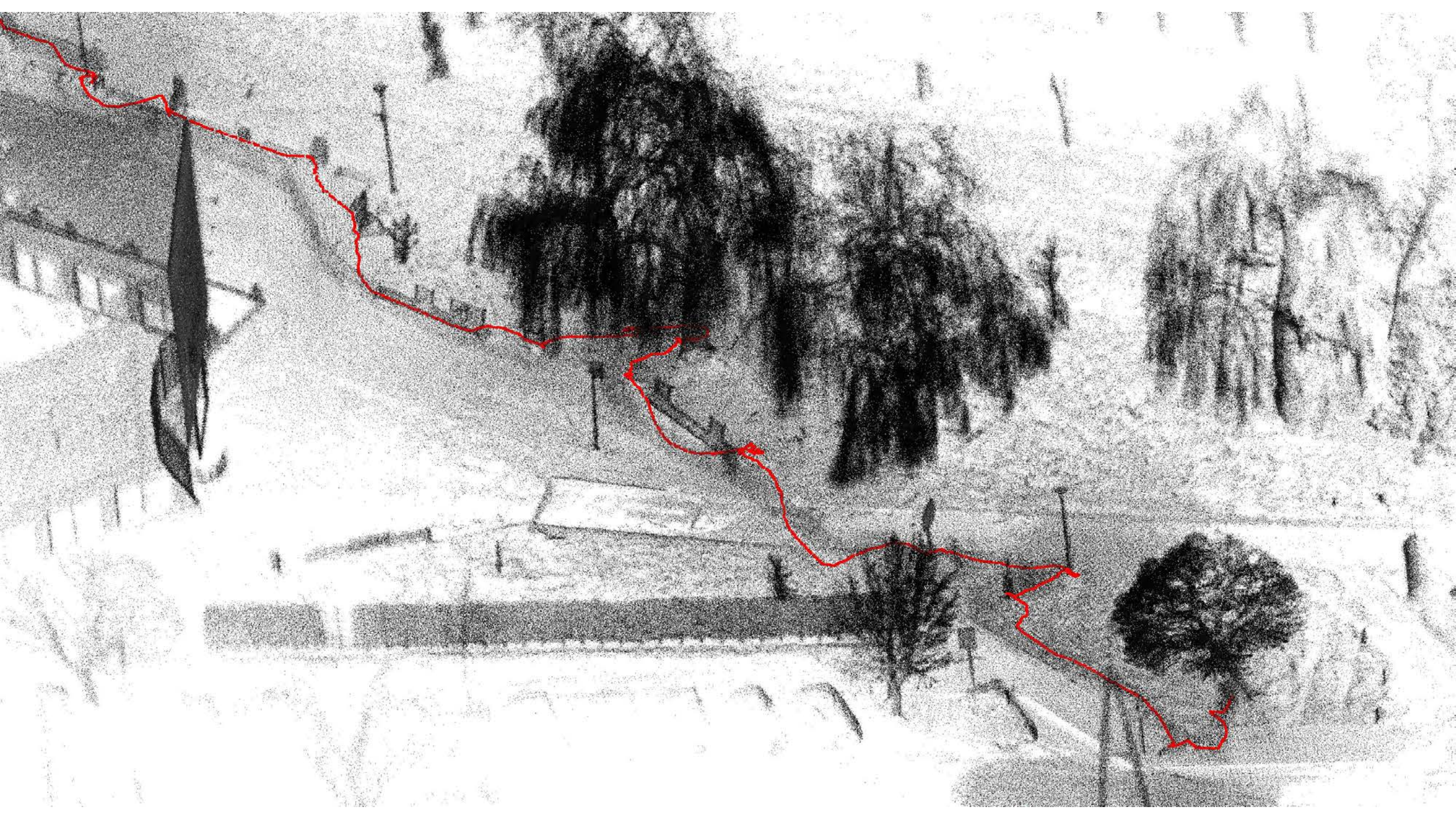




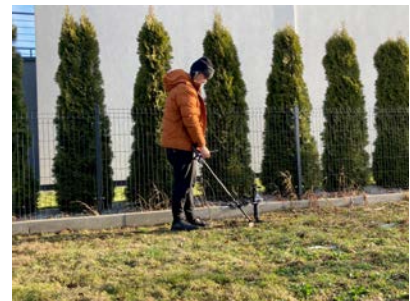
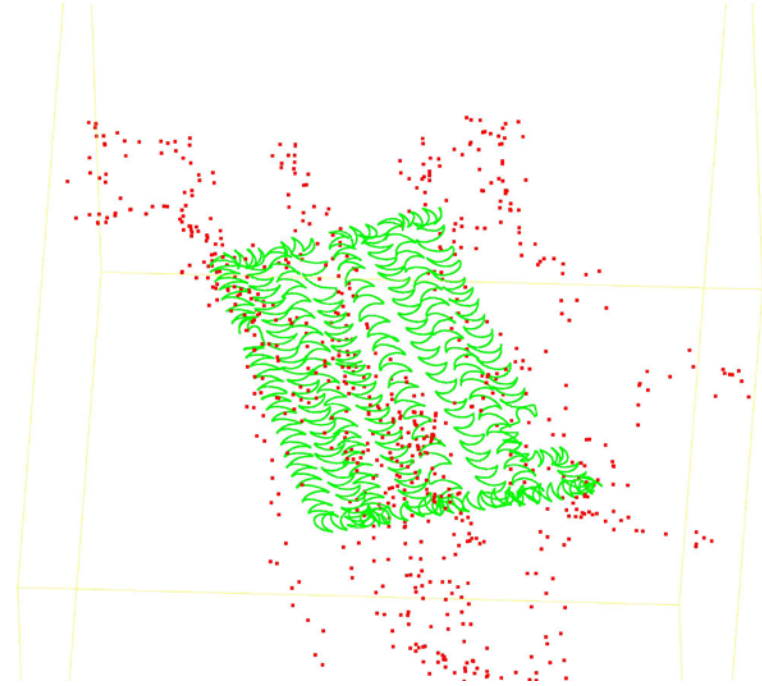
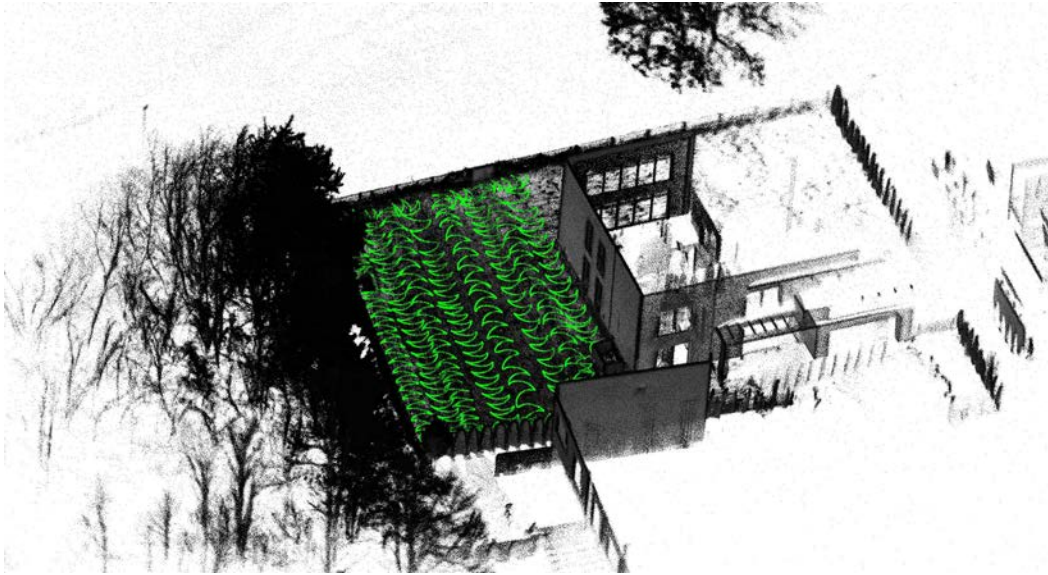
K9



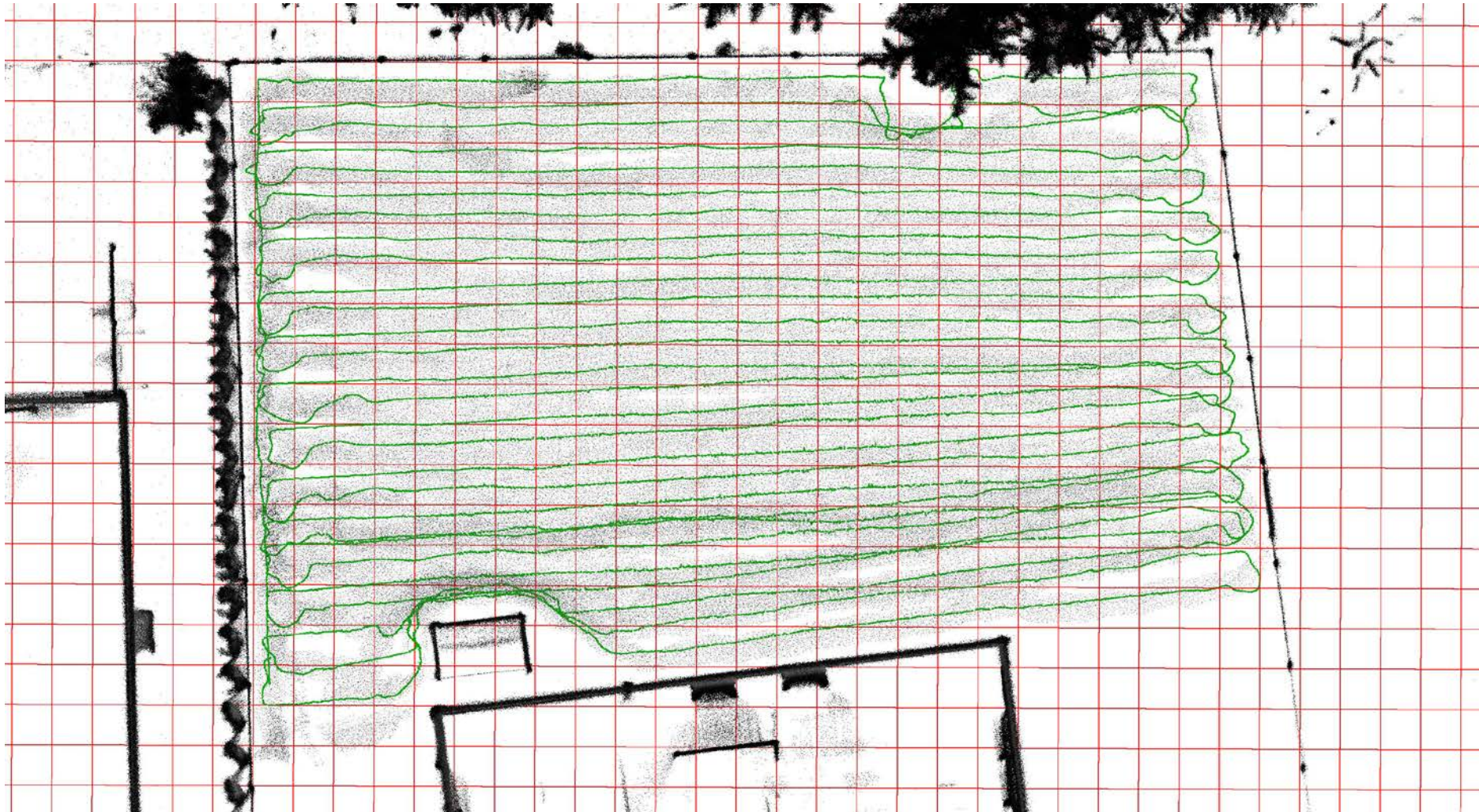




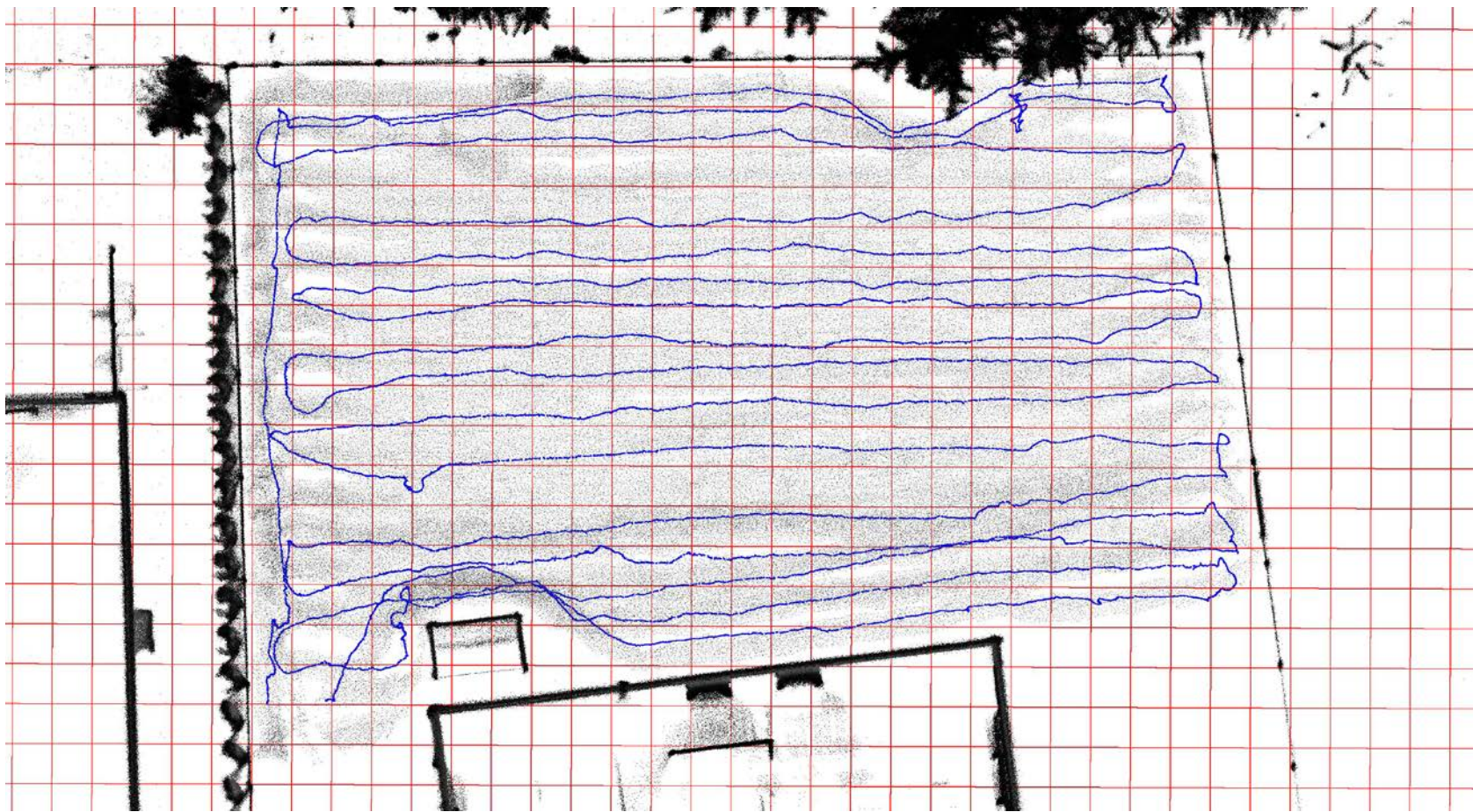
Experiment (1/6)



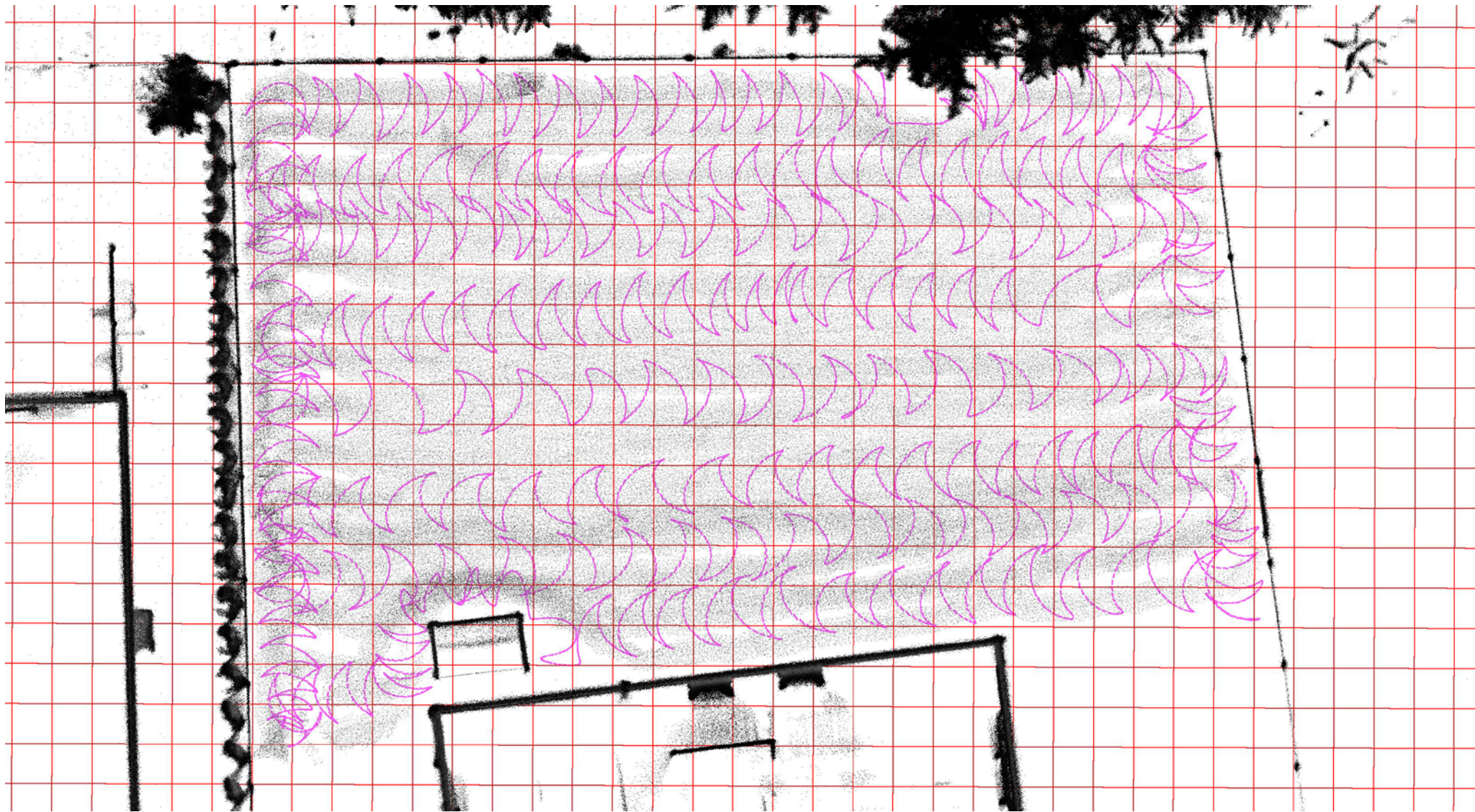
Experiment (2/6)



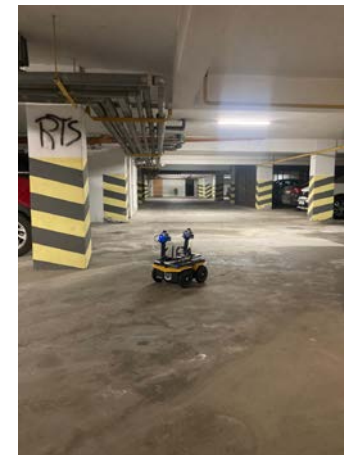
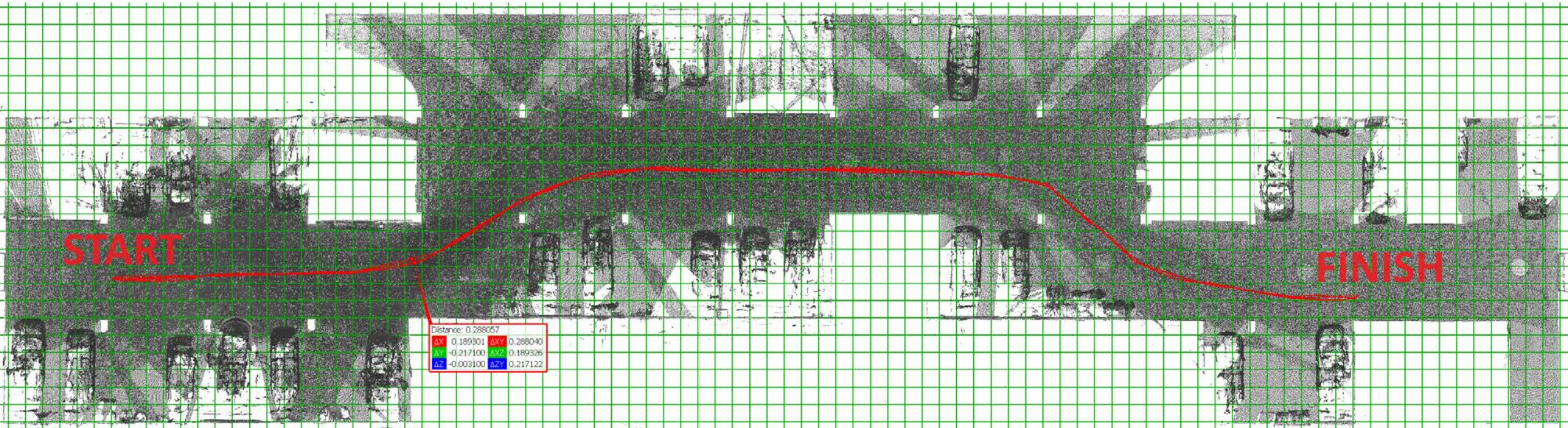
Experiment (3/6)



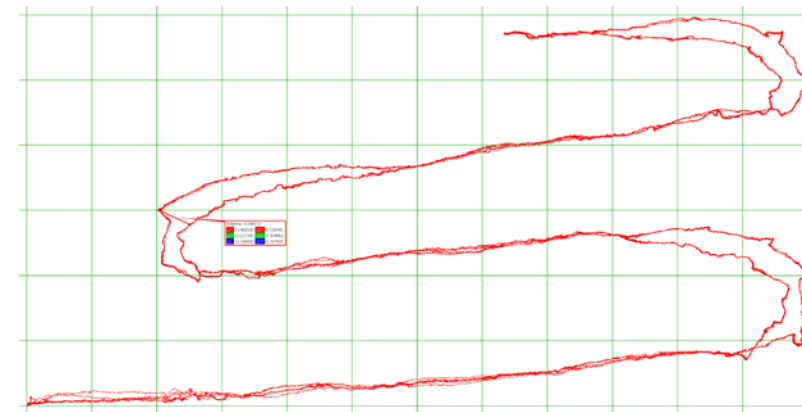
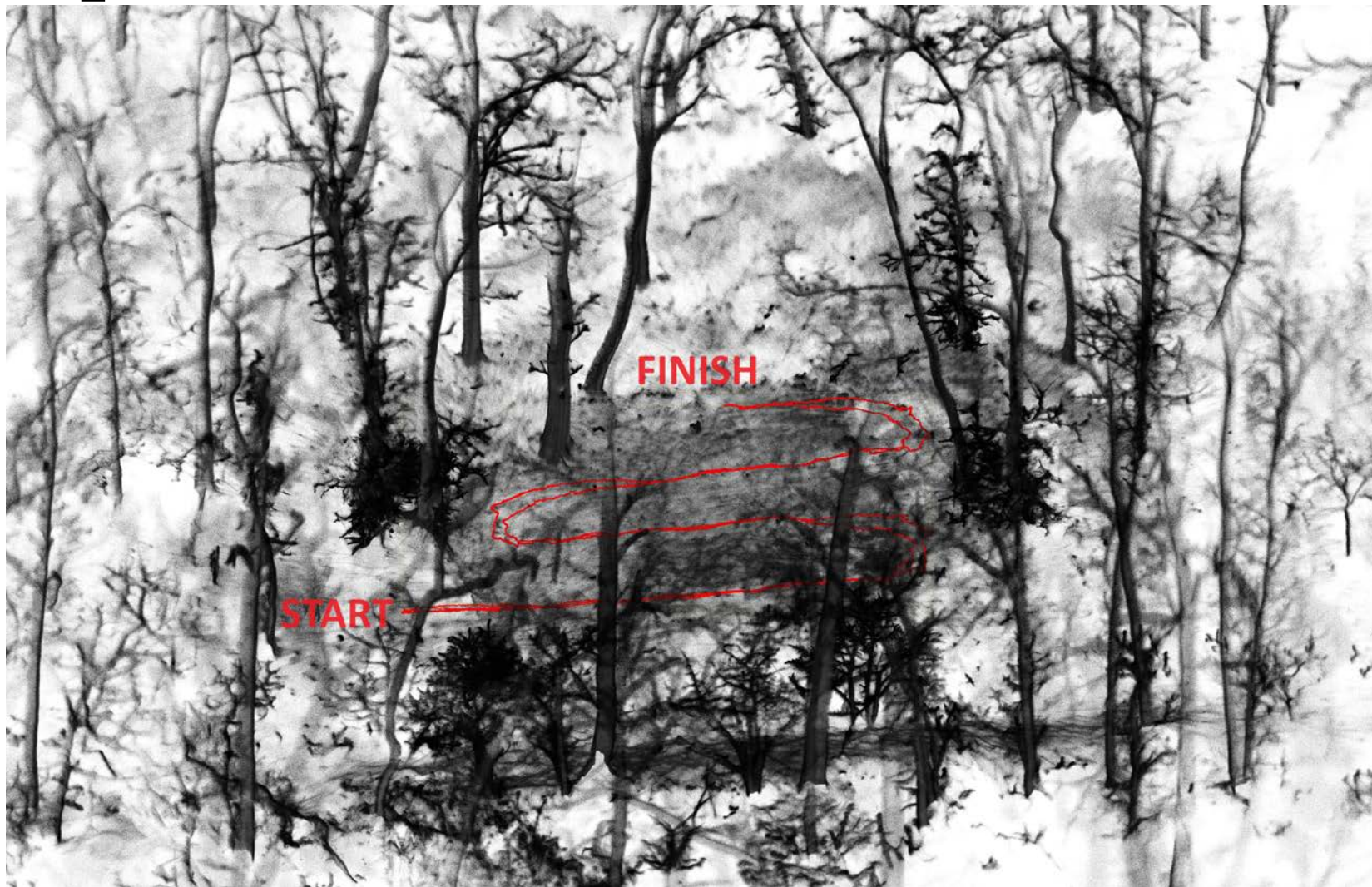
Experiment (4/6)



Experiment (5/6)



Experiment (6/6)



Q&A