XXVII FIG CONGRESS
11–15 SEPTEMBER 2022
Warsaw, Poland

Volunteering for the future – Geospatial excellence for a better living

Assessment of the Possibility of Using the SAND Library for Processing Point Clouds in the Big Data Environment on the Example of UAV-LiDAR Data for a Forest

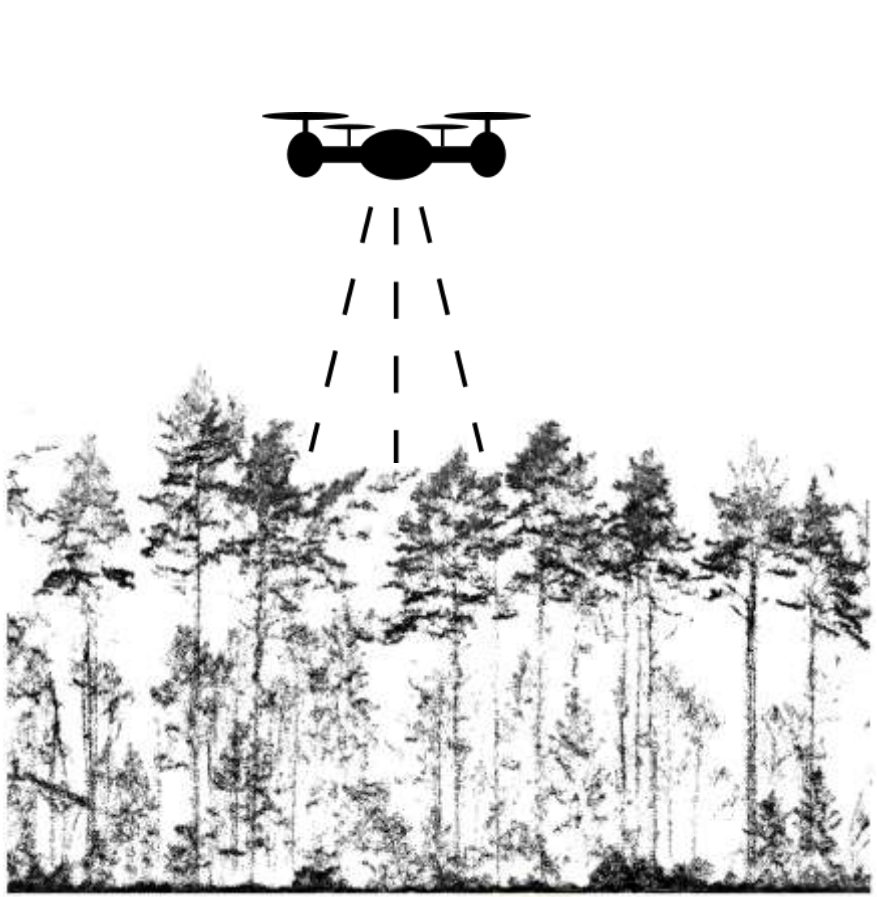
Dorota Marczykowska, Jarosław Czajka, Wojciech Ostrowski and Magdalena Pilarska-Mazurek

Warsaw University of Technology and DragonFly Vision

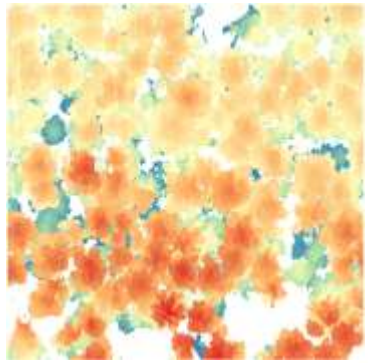
ORGANISED BY FIG SGP

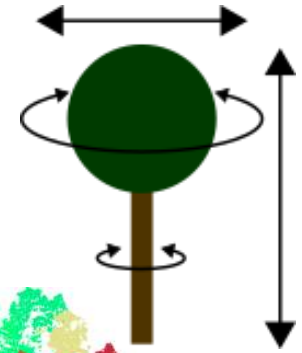
PLATINUM SPONSORS esri Trimble.

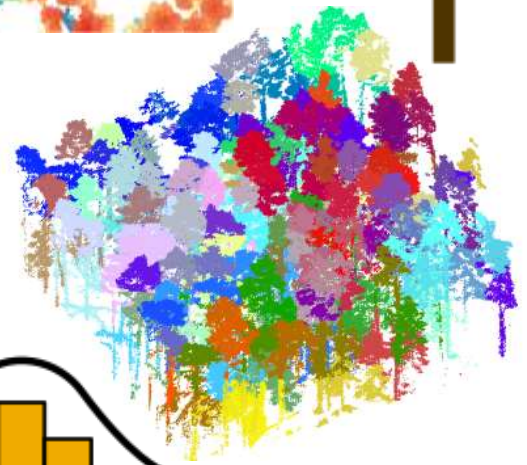
Challenges in UAV-LiDAR data processing for forestry

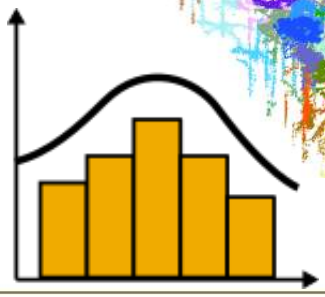


1 bilion p/km²







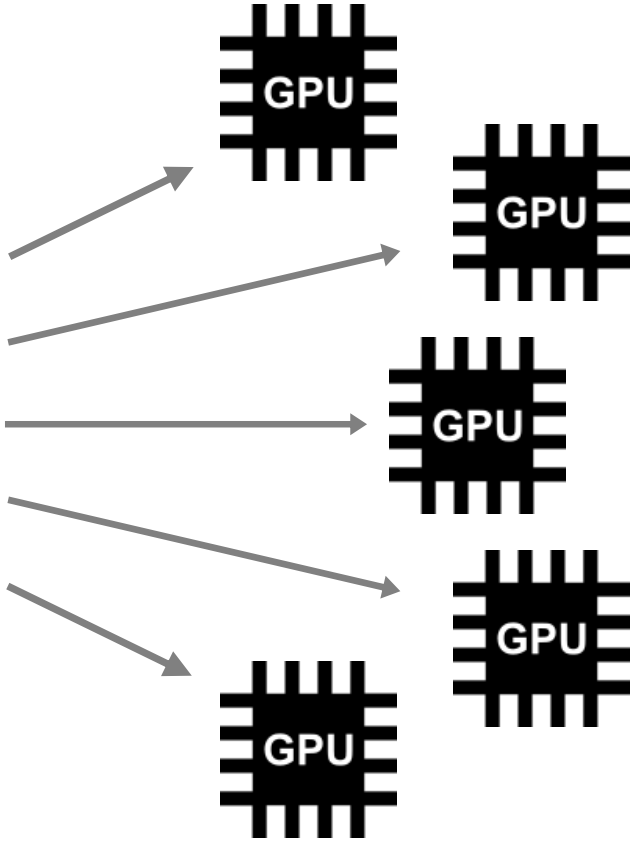


BigData solution for point clouds

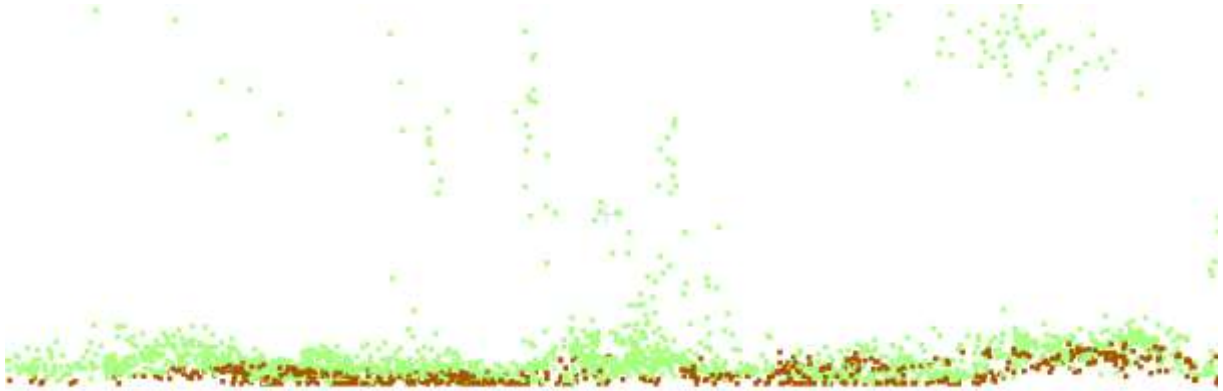
CENAGIS

+

SAND

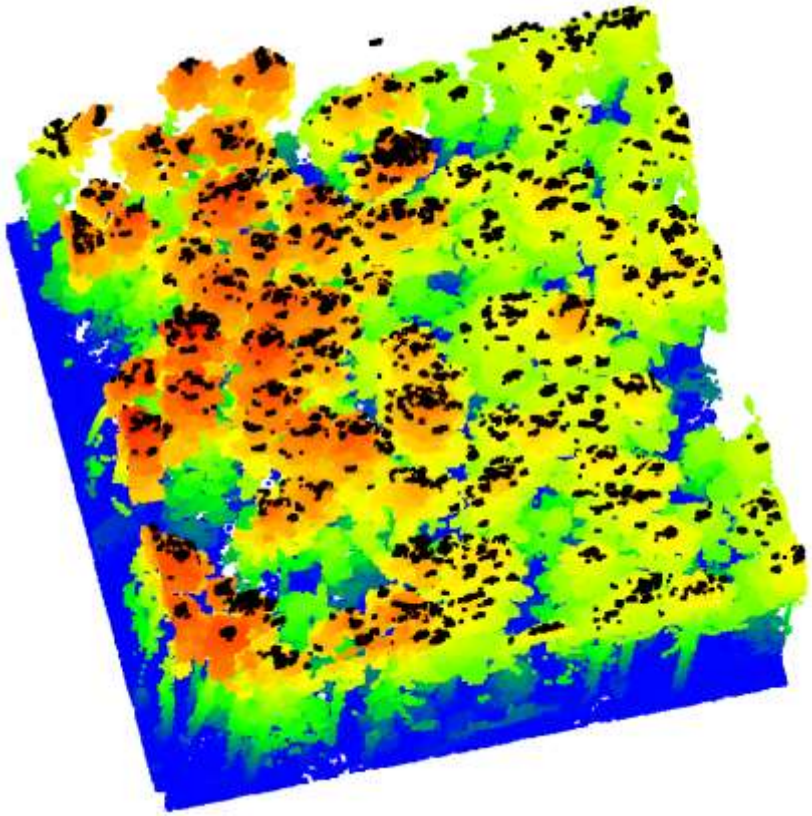


SAND functionality examples – ground classification

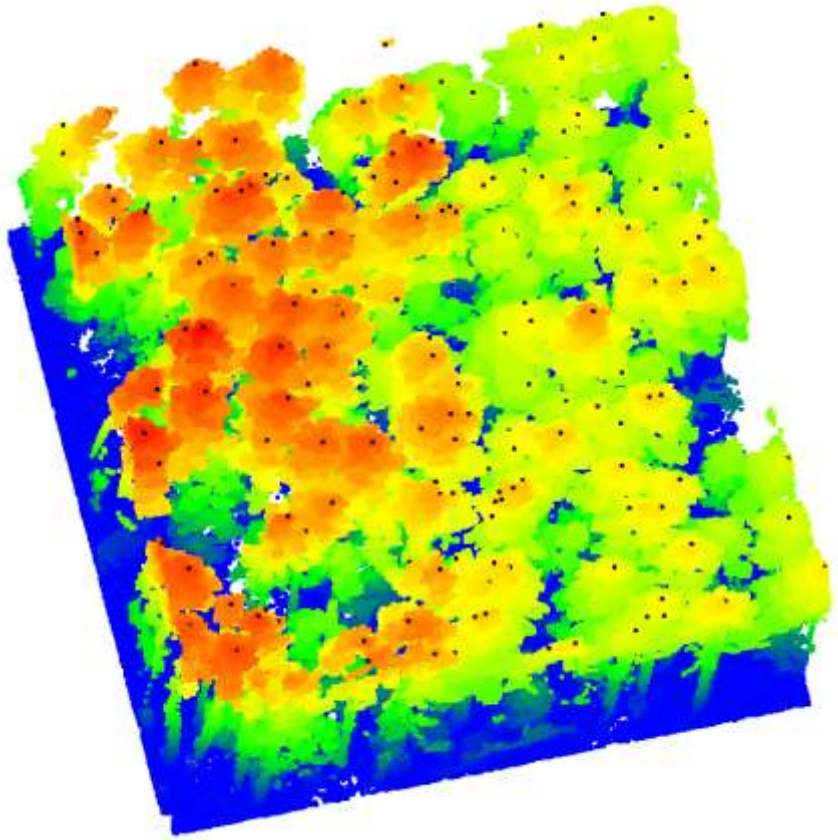


Result of ground classification with default values of parameters.
Ground points are brown

SAND functionality examples – local exterum determining

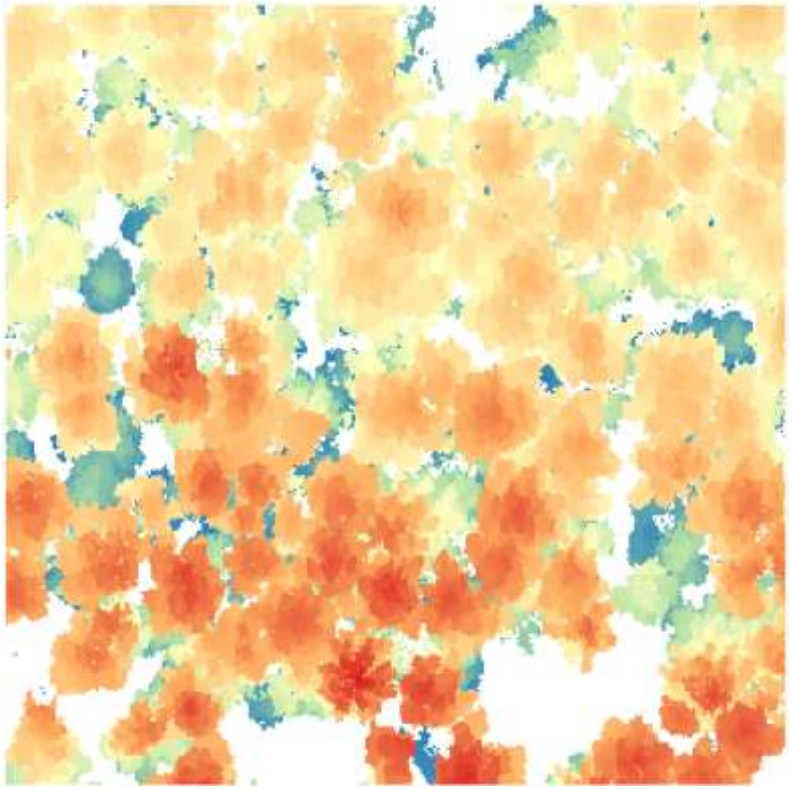


Local maxima in range 3.0 m - the highest 100 points



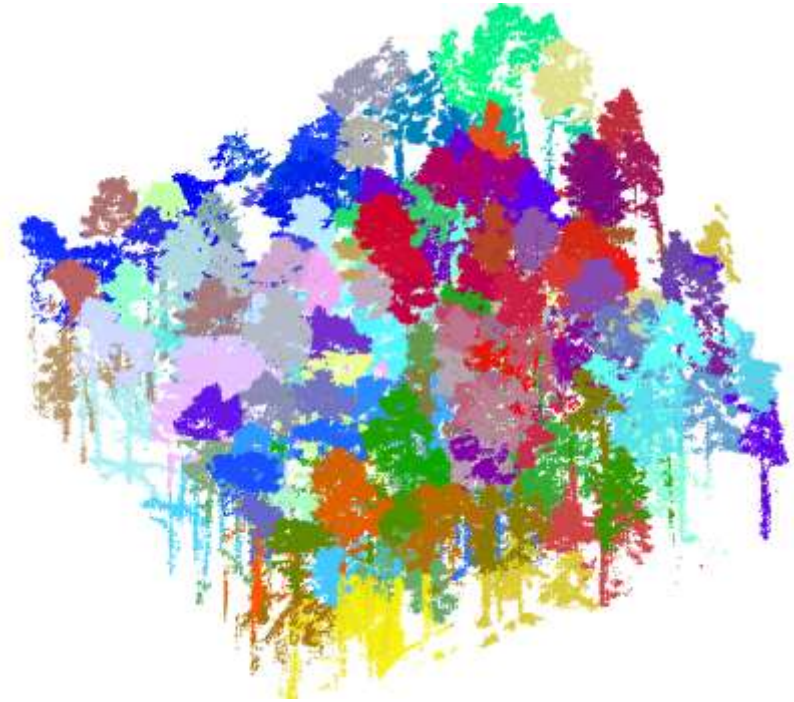
Local maxima in range 3.0 m - single points

SAND functionality examples – creating rasters

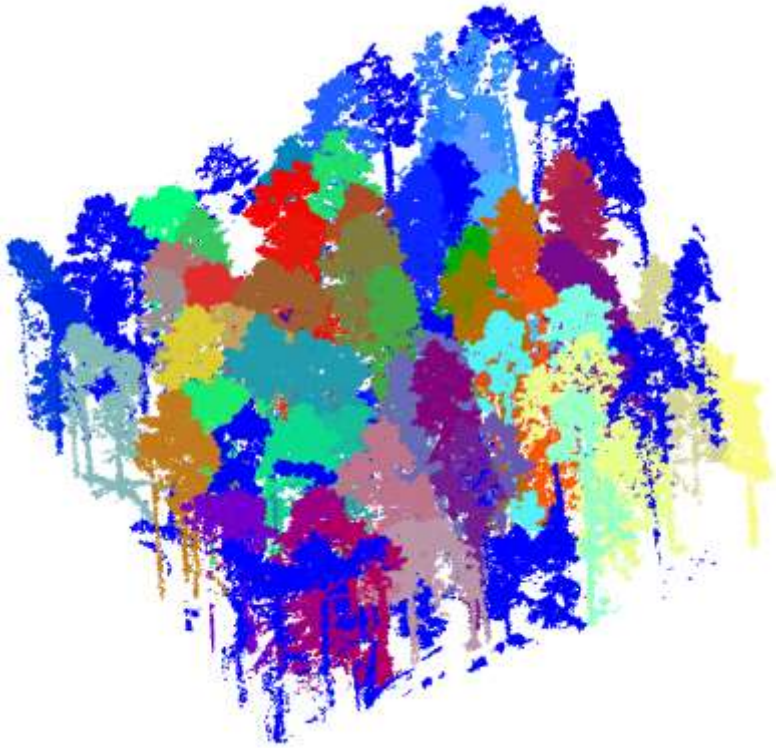


Fragment of CHM created using pit free with maximum value method

SAND functionality examples – point cloud segmentation



Example of result of K-means segmentation



Example of result of mean shift segmentation

SAND advantages

- Python library – easy to use and compatible with CENAGIS environment
- Data structures suitable to use with Apache Spark
- Customized tools
- Large set of algorithms and the ability to edit many of their parameters
- Continuous development in cooperation with the team of photogrammetrists
- Many interface levels - suitable for less and more advanced users

Thank you for your attention

Contact: dorota.marczykowska@pw.edu.pl