

2nd EuroSDR Workshop on High Density Image Matching for DSM Computation

June, 13th-14th 2013, Vienna, BEV

The participants were asked to form six groups, each consisting of at least two members from academia, NMCAs and private sector.

Break-out Session 1

Topic: *Expectations on Dense Image Matching*

- For this workshop
- Beyond this workshop

Expectations for this workshop:

- Evaluation of software products with respect to accuracy, processing time, costs, ...
- Comparison of different software. Investigate pros and cons of every algorithm.
- Development of benchmarks between software-producers.
- Better understanding of what each software can do.
- What kind of input is needed to get acceptable results?
- Discussion about optimal flight parameters, such as
 - Overlap (along- and cross-track)
 - Resolution (8 bit vs. 16 bit)
 - Etc...
- Discuss challenging areas such as shadows, snow and areas with bad texture.
- Use of image matching in mountain areas for improvement of DTM -
à "DSM 2 DTM – Methods"
- How to change specifications for aerial survey.
- Will the image-based DSM (iDSM) be the next final product?
- See, how the datasets have been quality tested.
- Discuss, how forestry can be analyzed using DIM.

- Start to learn the error characteristics of dense matching.
- Short term developments.
- Relation between LiDAR and Image Matching
 - Limitations
 - Strengths
- Learn from experience from other participants
- Requirements of users, meet the end users.
- Networking
- Effects of radiometric processing
- Agreement of methods/recommendations
- State of the art in creating DSM (building, forest)

Expectations beyond this workshop:

- Development of quality criteria in order to check the quality of metadata.
- Guidelines for quality testing
 - shape
 - position
 - production
- Guidelines for point cloud format – customize for point matching.
- Guidelines to optimize image capture/use
 - type of target
 - cost
 - light-radiometry
 - overlap
- Quality indicators for each point.
- Raw point cloud available.
- To get really good available software for efficient matching and editing.
- Better exploitation of image content.

- Continuation of benchmarking by considering user´s needs (forestry, city models, country wide).
- Possibility to compute facade texture in order to produce 3D reality maps.
- Height models from imagery could maintain DTM & DSM.
- Better results over water surfaces.
- Is the production of Nadir Orthophotos for large areas possible?
- Post-processing.
- From point cloud to model (DSM 2 DTM)
 - Classification
 - Blunder detection
- Data Management
 - Format
 - Storage
 - Standards
- Solve problem with geometrical artifacts.
- Standardized orientation information.
- Change detection – object detection.
- More participants in future workshops
 - More NMCA's and companies
 - People from other countries/other fields (e.g. CAD)
- Online comparison of results/methods
 - Test of new data/software similar to Middlebury stereo
 - Ground truth
- Development of software tools to model and exploit 3D-point clouds
- Real 3D
- Benchmarks for PC performance (OS, GPU, ...)