DATA-DRIVEN ANIMATION
INTERACTIVE 3D MODELS
SOCIAL MEDIA IN FOREST RESEARCH

Markku Åkerblom
Sanna Kaasalainen
Pasi Raumonen
Mikko Kaasalainen

math.tut.fi/inversegroup
Animation Models
Forest Research

Markku Åkerblom
Sanna Kaasalainen
Pasi Raumonen
Mikko Kaasalainen

Tampere University of Technology
Finnish Geospatial Research Institute
National Land Survey
DATA-DRIVEN ANIMATION

INTERACTIVE 3D MODELS

SOCIAL MEDIA IN FOREST RESEARCH

Markku Åkerblom
Sanna Kaasalainen
Pasi Raumonen
Mikko Kaasalainen

math.tut.fi/inversegroup
Plot level reconstruction
DATA-DRIVEN ANIMATIONS

Planning
- Compute results
- Select points that benefit from visualization
- Complete results
- Examples that don’t fit a publication
- Summary of lengthy content
- Know your audience
- Export data

Creating
- Use the right tools
- www.blender.org
- Stylize relations: curves, textures
- Keep relations short and simple
- Balance between accuracy and beautification
- Use controls over text

Publishing
- Group layering
- Trace a success framework
- Enable linking of datasets
- Publish the resulting animation
- Compressing solutions
- Search functionality

Compute means of top and bottom leaves
The final cylinder model

MATLAB
Planning

- Compute results
- Select parts that benefit from visualization
  - Complex results
  - Examples that don't fit a publication
  - Summary of lengthy content
  - Know your audience
- Export data
Creation

- Use the right tools
  - www.blender.org
  - Steep learning curve but worth it
- Keep videos short and simple
  - Balance between accuracy/understandability
  - Use voice-over or text
Publishing

- Group homepage
  - Ties to scientific framework
  - Enables linking of datasets

[YouTube] (bit.ly/1FU9tRI)

- Provides file hosting and video settings
- Commenting system
- Search functionality
Published on Nov 9, 2014
This video shows how a forest plot can be automatically reconstructed from terrestrial laser scanning (TLS) data. Each of the trees are identified in the data and reconstructed as cylinder models.
INTERACTIVE 3D MODELS

Creating
- Compute results
- Export data (obj file)
- Vertex and face information
- Select color / texture

Automation
- When models are reconstructed
  - Export to html
  - Compute properties
  - Upload model
  - Embed model in gallery
- Updating is very simple

Publishing
- 3rd party service for sharing and displaying models
  - sketchfab.com
  - store, embed
  - Copyrights required

[Diagram of a 3D model with interactive elements]
Creating

- Compute results
- Export data (.obj file)
  - Vertex and face information
  - Select color / texture
Publishing

- 3rd party service for storing and displaying models

- sketchfab.com
  - store & embed
  - no plugins required
Automation

- When models are reconstructed
  - Export to file
  - Compute properties
  - Upload model
  - Embed new model to gallery

- Updating is very simple
Augmenting

Tree gallery
math.tut.fi/inversegroup/treegallery
bit.ly/1FdG7HP
Tree gallery
math.tut.fi/inversegroup/treegallery
bit.ly/1FdG7HP
ID: Straits
Volume: 14.75 m³
Area: 812.30 m²
Tree #: 8
Branch #: 32762
Element #: 161574

This forest plot was scanned by Dr. Eric Casella in Forest Research - Forestry Commission UK UK.
ID: oak1
Species: English Oak
Volume: 2.02 m³
Area: 101.31 m²
Branch #: 2786
Element #: 15760
SOCIAL MEDIA

Where?
www.facebook.com/qualityforest

Who?
- Quality Forest Research Consortium (QFc)
- Finnish Environment Institute
- Natural Resources Institute Finland
- Finnish Geospatial Research Institute
- Tampere University of Technology

How?
- Publications
- Videos & pictures
- Field stories
- Centralized administration
Where?

www.facebook.com/qualityforest
bit.ly/1Ary1Po
Who?

- Quality Forest Research Consortium (QFo)
  - Finnish Environment Institute
  - Natural Resources Institute Finland
  - Finnish Geospatial Research Institute
  - Tampere University of Technology
How?

- Publications
- Videos & pictures
- Field stories
- Centralized administration
Non-Destructive 3D Vegetation Monitoring with Hyperspectral LiDAR. A talk by Sanna Kaasalainen (FGI) in the Workshop for Laser Scanning Applications (Cologne in Mar 16) is available here (and lots of other interesting lidar talks too). [link](http://www.tr32db.uni-koeln.de/workshops/program.php?wsID=5)

A new paper by the TUT group on modelling tree stems.

Analysis of Geometric Primitives in Quantitative Structure Models of Tree Stems

One way to model a tree is to use a collection of geometric primitives to represent the surface and... [link](MDPI.COM)
DATA-DRIVEN ANIMATION
INTERACTIVE 3D MODELS
SOCIAL MEDIA IN FOREST RESEARCH

Markku Åkerblom
Sanna Kaasalainen
Pasi Raumonen
Mikko Kaasalainen

math.tut.fi/inversegroup
DATA-DRIVEN ANIMATION
INTERACTIVE 3D MODELS
SOCIAL MEDIA IN FOREST RESEARCH

Markku Åkerblom
Sanna Kaasalainen
Pasi Raumonen
Mikko Kaasalainen

math.tut.fi/inversegroup