

### 1. Full name and date

- Puttonen, Eetu Severi
- Male
- 27.09.2017

### 2. Date and place of birth, nationality, current residence

- 18.03.1982, Tuusula, Finland
- Finnish
- Kirkkonummi, Finland, contact: eetu.puttonen@nls.fi
- Orcid ID: [orcid.org/0000-0003-0985-4443](https://orcid.org/0000-0003-0985-4443)

### 3. Education and degrees awarded

- Doctor of Science, University of Helsinki, Physics, 25.09.2012, "Tree Species Classification with Multiple Source Remote Sensing data",  
**Verification:** University of Helsinki Student Register, <https://university.helsinki.fi/en/studying/contact-us/student-register>, [registrar@helsinki.fi](mailto:registrar@helsinki.fi)
- Master of Science, University of Helsinki, Physics, 16.11.2007, "Proteiinirakenteen avaruuskulmien NMR-mittausmenetelmien kehittäminen" (in Finnish) – "Development of NMR measurements for determining spatial angles of a protein structure"
- Finnish Matriculation Examination, High School of Kellokoski, Tuusula, 02.06.2001

### 4. Other education and training, qualifications and skills

-

### 5. Linguistic skills

- Mother tongue: Finnish
- Other languages: English (fluent), Swedish (basics), German (basics)

### 6. Current position

- Finnish Geospatial Research Institute (FGI) in the National Land Survey of Finland, 01.01.2017 - , research manager (tutkimuspäällikkö)
- *Research career phase:* Level 3, established researcher

### 7. Previous work experience

- Academy of Finland post-doctoral researcher (grant no. 265949/292757), 9/2013 – 8/2016
- **Researcher mobility**
  - Technical University of Vienna, Department of Geodesy and Geoinformation
    - 6 months over 6/2015 – 9/2017 in 16 recurring visits, total duration 27 weeks
    - 6 months, 7 – 12/2014, visiting post-doctoral researcher
- Finnish Geospatial Research Institute (FGI) in the National Land Survey of Finland [*formerly Finnish Geodetic Institute*], 01.01.2015 – 31.12.2016, senior research scientist (vanhempi tutkija)
- Finnish Geodetic Institute
  - 01.03.2011 - 31.12.2014, senior research scientist (vanhempi tutkija)
  - 01.01.2008 - 28.02.2011, research scientist (tutkija)
  - 25.06.2007 - 31.12.2007, research assistant (tutkimusapulainen)
  - 15.05.2006 - 15.08.2006, research assistant (tutkimusapulainen), summer worker

- Finnish Biological NMR Center, Institute of Biotechnology, University of Helsinki 01.06 – 31.07.2005, research assistant (tutkimusapulainen), summer worker
- Division of Atmospheric Sciences, Department of Physics, University of Helsinki 31.05 - 31.08.2004, research assistant (tutkimusapulainen), summer worker

## 8. Research funding as well as leadership and supervision

### *Leadership:*

- Principal Investigator in Academy of Finland research project “Integration of large multisource point cloud and image datasets for adaptive map updating” (grant no. 295047), 1/2016 – (until 12/2017)
- Leader of the group “Mapping and Change Analysis Applications with Multiple Scale Remote Sensing” in Finnish Geospatial Research Institute (FGI) in the National Land Survey of Finland, 5/2016 – (on-going )

### *Research grants:*

- Academy of Finland, research project “Integration of large multisource point cloud and image datasets for adaptive map updating” (grant no. 295047), 1/2016 – 12/2017, **377 356€**, *main applicant, in collaboration with Dr. Leena Matikainen*
- Academy of Finland, post-doctoral researcher (grant no. 265949/292757), 9/2013 – 8/2016, **197 300€**, *main applicant*
- Foundation mobility grant: “Tutkijat maailmalle, osaamista Suomeen”, 6 – 12/2014, **15 000€**, *main applicant*
- European commission call FP7-SPACE-2013-1, grant no: 606971, 9/2013 – 10/2017, **1 993 000€**, “Advanced\_SAR: Advanced Techniques for Forest Biomass and Biomass Change Mapping Using Novel Combination of Active Remote Sensing Sensors”, *assistant* (Principal Investigator, Prof. Juha Hyypä)

### *Participation in other significant research grant applications*

- European commission call EO-1-2016, “Boosting Copernicus Towards Change Detection in 3D Forestry”, *assistant* (Principal Investigator, Dr. Xinlian Liang)
- European commission call EO-2-2015, “Stimulating wider research use of Copernicus Sentinel Data”, *coordinator*
- European commission call FP7-ICT-2011-9, 2012, *assistant* (Principal Investigator, Prof. Juha Hyypä)

## 9. Merits in teaching and pedagogical competence

-

## 10. Awards, prizes and honours

-

## 11. Other academic merits

- *Pre-Examiner of International Doctoral Dissertations*  
Mónica Herrero-Huerta. 2016. "Close-Range Photogrammetry applied to Agroforestry Engineering" for Department of Cartographic and Land Engineering, University of Salamanca, <http://hdl.handle.net/10366/132971>
- *Peer Reviewer in the Following Scientific Journals:*  
MDPI Sensors  
MDPI Forests  
Elsevier Remote Sensing of Environment  
African Journal of Agricultural Research  
ASPRS Photogrammetric Engineering & Remote Sensing  
PFG – Journal of Photogrammetry, Remote Sensing and Geoinformation Science  
MDPI Remote Sensing  
Elsevier Urban Forestry & Urban Greening  
ISPRS Journal of Photogrammetry and Remote Sensing  
Environmental Engineering and Management Journal
- *Peer Reviewer in the Following Scientific Conferences:*  
ISPRS 2016 – XXIII Congress, Scientific Committee WG VII/7 - Synergy in Radar and LiDAR  
LaserScanning 2015, member of the Scientific Committee  
ISPRS 2012 – XXII Congress, WG VII/3
- *Editorial positions*  
Frontiers in Plant Science special issue, "Optical approaches to capture plant dynamics in time, space, and across scales", *Guest Associate Editor*, <http://journal.frontiersin.org/researchtopic/5475>  
MDPI Forests special Issue, "Forest Ground Observations through Terrestrial Point Clouds", *Co-Guest Editor*, [http://www.mdpi.com/journal/forests/special\\_issues/ground\\_observations](http://www.mdpi.com/journal/forests/special_issues/ground_observations)

## 12. Scientific and societal input of research

- 35 peer reviewed publications
- h-index: 12, i10-index: 15 (Google Scholar: <https://scholar.google.com/citations?user=s4oN9JYAAAAJ&hl=en>)
- 10 most important publications (in publication order, latest first)

Puttonen, E., Briese, C., Mandlbürger, G., Wieser, M., Pfennigbauer, M., Zlinszky, A., Pfeifer, N. 2016, Quantification of Overnight Movement of Birch (*Betula pendula*) Branches and Foliage with Short Interval Terrestrial Laser Scanning. *Frontiers in Plant Science*. Vol. 7, no. 222. doi: 10.3389/fpls.2016.00222 [I - see below, **Merits in scientific communication**]

Puttonen E., Hakala, T., Nevalainen, O., Kaasalainen, S., Karjalainen, M., Anttila, K., 2015, Artificial target detection with a hyperspectral lidar over 26-h measurement. *SPIE Optical Engineering*. 0001; 54(1):013105. doi:10.1117/1.OE.54.1.013105

Puttonen, E., Krooks, A., Kaartinen, H., Kaasalainen, S., March 2015, Ground Level Determination in Forested Environment With Utilization of a Scanner-Centered Terrestrial Laser Scanning Configuration, *Geoscience and Remote Sensing Letters, IEEE*, vol.12, no.3, pp. 616 – 620. doi: 10.1109/LGRS.2014.2353414

Puttonen, E., Lehtomäki, M., Kaartinen, H., Zhu, L., Kukko, A., Jaakkola, A. 2013. Improved Sampling for Terrestrial and Mobile Laser Scanner Point Cloud Data. *Remote Sens*, 5, 1754-1773. <http://www.mdpi.com/2072-4292/5/4/1754>

Puttonen, E., June 2012. Tree species classification with multiple source remote sensing data. Ph.D. thesis, University of Helsinki. p. 163.

Puttonen, E., Jaakkola, A., Litkey, P., Hyypä, J., 2011. Tree Classification with Fused Mobile Laser Scanning and Hyperspectral Data. *Sensors*, 11 (5), 5158–5182, DOI:10.3390/s110505158. URL <http://www.mdpi.com/1424-8220/11/5/5158/>

Puttonen, E., Litkey, P., Liang, X., Kaartinen, H., Kukko, A., September 2010. Single tree canopy projection area extraction from single-scan terrestrial laser scanner data. In: *Silvilaser 2010, 10<sup>th</sup> International Conference on LiDAR Applications for Assessing Forest Ecosystems*, September 14-17, Freiburg, Germany.

Puttonen, E., Suomalainen, J., Hakala, T., Räikkönen, E., Kaartinen, H., Kaasalainen, S., Litkey, P., 2010. Tree species classification from fused active hyperspectral reflectance and LiDAR measurements. *Forest Ecology and Management* 260 (10), 1843 – 1852, DOI: 10.1016/j.foreco.2010.08.031. URL: <http://www.sciencedirect.com/science/article/B6T6X-511BPGJ-4/2/596208be107>

Puttonen, E., Litkey, P., Hyyppä, J., 2009. Individual tree species classification by Illuminated-Shaded area separation. *Remote Sensing* 2 (1), 19–35. URL <http://www.mdpi.com/2072-4292/2/1/19>

Puttonen, E., Suomalainen, J., Hakala, T., Peltoniemi, J., July 2009. Measurement of Reflectance Properties of Asphalt Surfaces and Their Usability as Reference Targets for Aerial Photos. *IEEE Transactions on Geoscience and Remote Sensing* 47 (7), 2330–2339.

- *Merits related to the production and distribution of research results and research data*

Puttonen, E., Hakala, T., Nevalainen, O., Kaasalainen, S., Krooks, A., Karjalainen, M., Anttila, K. (2016). "Hyperspectral Spatio-Temporal Point Cloud Dataset Collected With Finnish Geospatial Research Institute Hyperspectral Laser Scanner". *Dataset and technical report*, p. 7, version v. 2016-04-04. **Permanent link:** <http://urn.fi/urn:nbn:fi:csc-ida-4x201604052015015324658s>

Puttonen E., Litkey, P. (2014). "matlas\_tools: A mex Gateway for Utilizing lastools Read and Write Functions in MATLAB.-2 Technical report and open access tools, v.140322, 13 p. <http://www.fgi.fi/fgi/publication/open-programs-and-tools> (Accessed on 12.04.2016) **Update:** Project has been moved to Github: [https://github.com/plitkey/matlas\\_tools](https://github.com/plitkey/matlas_tools)

- *Merits in science communication and expert assignments in the media*

*Press release* about article "Quantification of Overnight Movement of Birch (*Betula pendula*) Branches and Foliage with Short Interval Terrestrial Laser Scanning" in *Frontiers in Plant Science* (2016) [I] published jointly together with *National Land Survey of Finland* and *TU Wien*, resulted in **wide international publicity in dozens of news releases**. For details, see: <https://frontiers.altmetric.com/details/5314962>

Additional listing of news releases in authors' national media (AUT, FIN, HUN) is available on request.

Article in "Tietoa Maasta" a customer magazine of National Land Survey of Finland, title "KOLMIULOTTEISTA LASERKEILAUSTA KAIKISSA VÄREISSÄ" (in Finnish), no. 2/2015

### 13. Positions of trust in society and societal merits

-

### 14. Other merits

-