

## **CV of Dr Milto Miltiadou**

Webpage: [users.ntua.gr/miltomiltiadou](https://users.ntua.gr/miltomiltiadou)

Blog: [miltomiltiadou.blogspot.com/](https://miltomiltiadou.blogspot.com/)

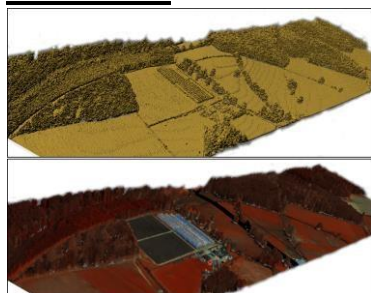
Twitter: [@DrMiltiadou](https://twitter.com/DrMiltiadou) @ DASOS

GitHub: <https://github.com/Art-n-MathS>



**Short bio:** Dr Milto Miltiadou is a researcher interested in the advancement of algorithms for forest monitoring. She manages the RIF Excellence Hub project ASTARTE (EXCELLENCE/0918/0341) that she initiated during her postdoc FOREST (OPPORTUNITY/0916/MSCA/0005) that was a continuation of her EngD. She completed her EngD at the Department of Computer Science at University of Bath, UK and the Remote Sensing group, Plymouth Marine Laboratory, UK. She worked on the detection of dead standing Eucalypt trees for managing biodiversity in Australia, efficient data structures for managing LiDAR during iso-surface extraction from implicit objects and time-series radar (SAR) data analysis for understanding/predicting phenological changes of Cypriot forests. She is proficient in C++, python, R, machine learning, image processing, computer graphics, visualisations and interpretation of various types of remotely sensed data. Experience in both academia and industrial innovation was achieved through her international placements that includes two forestry companies: Carbomap (UK) and Interpine Group Ltd (NZ). She is a reviewer at high-impact well-established journals: Remote Sensing of the Environment, MDPI Remote Sensing, Sensors and Applied Sciences. Her work was acknowledged as a distinct contribution by Ladies of Landsat and was included in the Most Notable Articles of the MDPI Remote Sensing Journal for December 2020 - February 2021. She is also an Artic Vault Contributor of the 2020 Github Archive Program aiming to preserve worlds heritage of open-source software with her open source software DASOS selected for inclusion in the program.

### **Education:**



**2017: EngD (equivalent PhD) in Efficient Accumulation, Analysis and Visualisation of Full-Waveform LiDAR in a Volumetric Representation with Applications to Forestry - Industrial Based Doctorate**

*Degree with taught units during the first year*

*Department of Computer Science, University of Bath, United Kingdom*

*Remote Sensing Group of Plymouth Marine Laboratory, United Kingdom*

**Key points:**

- Alignment of full-waveform LiDAR data with hyperspectral images for generating tree coverage maps using Gaussian mixture model
- Detection of dead standing Eucalypt trees in a native Australian forest by extracting 3D structural features. Results were cross validated with ground truth data.
- Polygonal meshes derived from laser data, efficient interpretation
- Implementation of the open-source software DASOS: <http://miltomiltiadou.blogspot.com.cy/2015/03/las13vis.html>

**2012: MSc Computer Animation and Visual Effects – Distinction (1<sup>st</sup>)**

*Media School, Bournemouth University, United Kingdom* **Research and**

**Development:**

- Small Projects: Automated tree and forest modelling, cloth simulation
- Major Project: Classification of 3D motion capture data for fall detection of elder people in their home environment.

Showreel: <https://www.youtube.com/watch?v=11ImtFBytZk>



**2011: BSc Computer Science - Second-class, Upper division (2:1)** *Department of Computer Science, University of Bristol, United Kingdom*

**Individual Project:** Geometrical correspondence tools for 3D noisy facial point clouds – 75% (first class mark)

**Core Units:** Image Processing and Computer Vision (which includes Machine Learning and Signal processing), Artificial Intelligence, Computer Graphics, Animation Production

## **Publications:**

Full list of publications attached at the end.

## **Funding and Scholarships:**

- 2022 “**AustrLiDAR**” – MSCA Fellowship – 276,135.60euro scored 91.4/100  
**Title:** Developing better algorithms for quantifying the role forests play in regulating terrestrial carbon cycle  
*Received Sealed of Excellence under Horizon Europe*
- 2019-2022 “**ASTARTE**” – EXCELLENCE/0918/034 - 250,000euro scored 14.56/15  
**Title:** Analysis of SAR and thermal satellite data time-series for understanding the long-term impact of land surface temperature changes on forests.  
*Funded through Cyprus Research Innovation Foundation: Excellence Hubs call*
- 2018-2020 “**FOREST**” - OPPORTUNITY/0916/MSCA/0005 - 150,000euro scored 90.04/100  
**Title:** Advancement of tree structure observation algorithms for FOREST monitoring  
*Funded through Cyprus Research Innovation Foundation: 2<sup>nd</sup> Opportunity for MSCA Postdoctoral Fellowship*
- 2012-2016 **EngD (equivalent PhD) Studentship:** - ~ 100,000gbp highly competitive four-year EngD studentship funded by the Engineering and Physical Sciences Research Council’s (EPSRC) through the Centre for Digital Entertainment (CDE) Doctorate Training Centre. Funding included placement in industry, Remote Sensing Group at the Plymouth Marine Laboratory.
- 2008-2011 **Scholarship from the Cyprus State Scholarship Foundation**, awarded to students who scored excellent grades on their Lyceum Apolytirion.

## **Work Experience:**

- ❖ **2017- ongoing: Special Scientist – Researcher** at *Cyprus University of Technology, Cyprus*
- 2020-2022 “**ASTARTE**”, **RIF Excellence hubs:**  
Analysis of time-series radar and thermal satellite data for understanding the long-term impact of land surface temperature changes on Cypriot forests.  
Roles include (1) project management – time, budget, task allocation, (2) signal processing methodologies and prediction models, (3) communication with partners and funder (4) automation of processing in python, R and other programming languages (4) paper and proposal writing
- 2018-2020 “**FOREST**”, **RIF 2nd Opportunity for H2020 Marie Curie Individual Fellowship**  
Analysis of full-waveform airborne laser scanning (LiDAR) data in C++:  
Multi-scale 3D windows and extraction of structural elements to train a classifier that detect dead standing trees  
Co-registration and fusion of LiDAR with satellite data for better prediction  
Processing laser waveforms for accounting occlusions before voxelisation  
Organise workshops for university students and the public audience
- 2017-2018 “**SEO-DWARF**”, **H2020 Research Innovation and Staff Exchange**, Feb 2017-May 2018:  
Research, implementation and automation of image processing techniques (e.g., edge detection) for deriving ocean metrics from satellite imagery  
Communication with partners, planning secondments of entire team, while and supporting management of the projects

## ❖ **Student supervision:**

- 2020- Co-supervising Christos Theocharidis (PhD student)
- 2018-2021 **Co-advised the PhD of Dr Rorai Pereira Martins-Neto** at Sao Paulo State University (Unesp),  
Thesis available at: <https://repositorio.unesp.br/handle/11449/215634>
- 2020-2021 Co-supervised Dimitris Apostolou (MSc student)

## ❖ 2012-2018: Participation in industrial innovation

**Carbomap** (July 2018 – as part of the “FOREST” project)

- Improving efficiency of DASOS’s functionalities using parallel computing.

**Planetek Hellas - Athens, Greece and Planetek Italia, Bari, Italy** (Apr 2017 - May 2017)

- Seconded as part of the SEO-DWARF project. Task included research implementation of remote sensing algorithms for ocean monitoring (fronts and turbidity), as well as scheduling secondment for the other team member.

**Interpine Group Ltd, Rotorua, New Zealand** (Jan 2016 - Mar 2016)

- Full-waveform LiDAR Analyst
- Working with the foresters to write a user-friendly user-guide for the open-source software DASOS
- This participation to the forestry industry was consider essential during the EngD of the researcher for understanding the related industrial innovation in the forestry sector

**NERC Airborne Research Facility, Plymouth Marine Laboratory, United Kingdom** (Oct 2012 - Mar 2017 – as an EngD student)

- The main placement of the EngD program undertaken by the researcher. As part of this industrial based doctorate degree, the research engineer is embedded to an industrial partner. This provides tailored training to the researcher, access to data and the chance to work on real-world problems.

## ❖ 2009-2013: Other work experience and teaching

Sep 2012 - Apr 2013: **Casual Admin Assistant**, *University of Bath, United Kingdom.*

- Preparing papers for interviews and welcoming potential students during open days
- High confidentiality is required while accessing UCAS applications of students

Oct 2011 - Aug 2012: **Student Ambassador** at *Bournemouth University, United Kingdom*

- Welcoming students at open days, answering student questions and giving them a tour around campus
- Good communication skills and team working skills required, as well as understanding of young potential students

Sep 2010 - Jul 2011: **Teaching Assistant** at the Greek Supplementary School, Weston-Super-Mare, United Kingdom

- Planning classes and teaching Modern Greek language and Greek culture to children under the guidance of the senior teacher

Sept 2009- Jan 2010: **Lab Demonstrator during undergraduate studies** at University of Bristol, Bristol, United Kingdom

- Helped first year students with their assignments on C++ programming.
- The researcher improved communication with students and understand the related mentoring aspects

## Prizes and Awards:

2021 **Distinguished manuscript contribution acknowledged by Ladies of Landsat**

The name of Dr Milto Miltiadou has been included in the Ladies of Landsat Manuscript Monday series, which is a weekly series highlighting cutting-edge research impacting the field of remote sensing (her manuscript is no. 104)

Link: <https://github.com/ladiesoflandsat/LOLManuscriptMonday>

**“Most Notable Article” in the category “Engineering Remote Sensing”**

Her article "A Comparative Study about Data Structures Used for Efficient Management of Voxellised FullWaveform Airborne LiDAR Data during 3D Polygonal Model Creation" was listed as one of the most Notable articles published in the **MDPI Remote Sensing** journal (impact factor 4.848) for the period of December 2020-February 2021.

2020 **Artic code Vault Contributor of 2020 Github Archive Program**

Her open-source software, DASOS, available at the repository <https://github.com/Art-n-MathS/DASOS> was included in Github 2020 Archive Program (designed to last for more than 1000 years) aiming to preserve open-source software for future generations.

### **“Audience Favourite Booth Award” at Researcher’s Night** of Cyprus

The booth entitled "Forest monitoring using satellite imagery for understanding the effects of climate change", which was presented as part of her project “ASTARTE” (EXCELLENCE/0918/0341) was voted as the best booth by the audience.

- 2016 **Ede and Ravenscroft Academic Prize for Excellence – Finalist:** selected as one of the five finalists for this prestigious prize that recognises the work of the best postgraduate researcher at the University of Bath, United Kingdom.
- 2015 **Student Poster Competition at Silvlaser Conference:** promotes researchers at early career by granting them free entrance to the conference.
- 2012 **Multiple dance awards** at the Southampton Competition on American Ballroom and Latin & the Bath Competition on American Ballroom and Latin
- 2012 **“You are Brilliant” award:** it was given to student representatives with high involvement at Bournemouth University. Nominated by three classmates.
- 2011 **Bristol Plus Award:** awarded by the University of Bristol’s Career Service to students who have gained significant professional and life skills through extra-curricular experiences

### **Invited Lectures and Workshops:**

- 2021 **“Forestry & Allied Subject Topics: Emerging Trends” FAST** organised by Prof Sas Biswas from Dolphin (P.G.) Institute of Biomedical & Natural Science Dehradun (DIBNS) Uttarakhand, India – Invited Speaker and Panellist
- 2020 **Advancement of tree structure observation algorithms for forest monitoring using LiDAR technologies** at National Technical University of Athens, Athens, Greece
- 2017 **Efficient accumulation, analysis and visualisation of full-waveform LiDAR in a volumetric representation with applications to forestry** at University of Bari, Bari, Italy
- 2017 **Efficient accumulation, analysis and visualisation of full-waveform LiDAR in a volumetric representation with applications to forestry** at Planetek Italia, Bari, Italy
- 2016 **Exploration and Visualisation of full-waveform LiDAR Data for Forestry Applications** at National Institute For Space Research (INPE), San Jose dos Campos, Brazil
- 2016 **Full day workshop on full-waveform LiDAR and the open-source software DASOS** at Interpine Group Ltd, Rotorua, New Zealand

### **Volunteering:**

Aug 2019-up to date: **Active member of “300,000 trees in Limassol”**

- Meet with local municipalities to arrange land for planting trees, participate to educational seminars at schools for public engagement and volunteering at tree planting events

Sept 2019-Sept 2021: **Committee member of “Friends of the Earth (Cyprus)”** Duties include monitoring the progress of the projects running, define the future directions of the organisation, interviewing new employers

Oct 2013-Jun 2016: **Writing Retreat Organizer** for CDE (Centre for Digital Entertainment) students , at Stonebarrow Manor, Charmouth, United Kingdom

- **Initiated the first writing retreat** with a colleague

- Duties includes, but not limited to, **interviewing potential speakers, hiring venue, arranging meals, scheduling and preparing entertainment**



- **Supervise and support the next generation of students** to gain the appropriate experience and organise the following years writing retreats

Oct 2013-Sep 2014: **Student Representative** for the EngD students of CDE, United Kingdom

- Collecting feedback for improving student experience and productively participating at CDE board meetings that define the future of the centre.

Sept 2012-Jul 2013: **Committee member of the Ballroom and Latin Sports Club**, University of Bath, United Kingdom

- Duties include raising money, advertising the club and arranging travel from and to competitions

Sept 2011- Dec 2012: **Active volunteer at Multimode Youth centre of Ypsonas** (MYCP), Cyprus

- Painted the theatrical scenery for the children's spring performance 2012
- Designed the leaflet for the classes and activities taking place the academic year 2011-12 in Photoshop.

Oct 2011 - Sept 2012: **Student Representative** of the MSc Computer Animation and Visual Effects course, as well as the entire Media school at Bournemouth University, United Kingdom - Collecting feedback, prepare reports and attend board meetings with academics

- Elected to represent Bournemouth University at the National Conference of the National Union of Students (NUS)

Jul 2011 - Jul 2012: **Graphic Designer & Artist** for the Multimode Youth Centre of Ypsonas

- Designed the leaflet for the classes and activities taking place the academic year 2011-12 in Photoshop and painted the theatre scene for their spring performance.
- Good sense of aesthetics and attention to the details are required

**Interests:** Dancing, Art, Baking

**Languages:** Greek (native), English (fluent)



## List of Publications of Dr Milto Miltiadou:

### **2022:**

- **Time Series Analysis of Landsat Data for Investigating the Relationship between Land Surface Temperature and Forest Changes in Paphos Forest, Cyprus**, V. Andronis, V. Karathanassi, V. Tsalapati, P. Kolokoussis, M. Miltiadou, C. Danezis *Remote Sensing* (Impact Factor: 4.848) [doi: 10.3390/rs14041010](https://doi.org/10.3390/rs14041010)
- **A selection of experiments for understanding the strengths of time-series SAR data analysis for finding the drives causing density, foliage and/or moisture related phenological changes in Paphos forest, Cyprus**, M. Miltiadou, V. Karathanassi, A. Agapiou, C. Theocharidis, P. Kolokousis, C. Danezis *Remote Sensing* (Impact Factor: 4.848) – (under review)
- **Using LiDAR data in Brazilian Atlantic Forest: exploring Machine Learning techniques to estimate stand and diversity variables**, R. P. M. Martins-Neto, A.M.G. Tommaselli, N.N. Imai, H.C. David, E. Honkavaara, M. Miltiadou *Remote Sensing* (Impact Factor: 4.848) – (to be submitted soon)

### **2021:**

- **A Comparative Study about Data Structures Used for Efficient Management of Voxelised Full Waveform Airborne LiDAR Data during 3D Polygonal Model Creation**, M. Miltiadou, N.D.F. Campbell, D. Cosker, M.G. Grant, *Remote Sensing* vol. 13, no. 4, p. 559 (Impact Factor: 4.848) [doi: 10.3390/rs13040559](https://doi.org/10.3390/rs13040559)
- **Do people understand and observe the effects of climate crisis on forests? The case study of Cyprus**, M. Miltiadou, E. Antoniou, C. Theocharidis, C. Danezis, *Forests* (Impact Factor: 2.633) [doi: 10.3390/f12091152](https://doi.org/10.3390/f12091152)
- **Identification of Significant LiDAR Metrics and Comparison of Machine Learning Approaches for Estimating Stand and Diversity Variables in Heterogeneous Brazilian Atlantic Forest**, R.P.M. Neto, A.M.G Tommaselli, N.N. Imai, H.C. David, M. Miltiadou, E. Honkavaara, *Remote Sensing*, vol. 13, no. 13, p. 2444 (Impact Factor: 4.848) [doi: 10.3390/rs13132444](https://doi.org/10.3390/rs13132444)
- **time-series of SAR data from 2015 till 2020**, M. Miltiadou, C. Theocharidis, V. Karathanassi, A. Agapiou, M. Nikolaidis, C. Danezis, *Proceedings of Silvilaser Conference 2021* [doi: 10.34726/wim.1962](https://doi.org/10.34726/wim.1962)
- **Extraction of structural variables using LiDAR data combined with hyperspectral images for classification of upper canopy tree species in Brazilian Atlantic Forest** Author: RP Martins Neto, Advisors: A. M. G Tommaselli, N. N. Imai, D. Hassan Camil, Miltiadou M. Universidade Estadual Paulista (Unesp)  
[Link: https://repositorio.unesp.br/handle/11449/215634](https://repositorio.unesp.br/handle/11449/215634)

## **2020:**

- **Detecting Dead Standing Eucalypt Trees from Voxelised Full-Waveform Lidar Using Multi-Scale 3D Windows for Tackling Height and Size Variations**, M. Miltiadou, A. Agapiou, S. Gonzalez Aracil, D.G. Hadjimitsis, *Forests*, vol. 11, no. 2, p. 161 (Impact Factor:2.633) [doi: 10.3390/f11020161](https://doi.org/10.3390/f11020161)
- **Exploring the importance for promoting Earth observation in education**, D.G. Hadjimitsis, P. Kyriakides, E. Akylas, ..., M. Miltiadou, E. Evagorou, C. Theocharidis, ..., G. Komodromos, *Earth Resources and Environmental Remote Sensing/GIS Applications XI*. Vol. 11534 [doi: 10.1117/12.2574134](https://doi.org/10.1117/12.2574134)

## **2019:**

- **Open source software DASOS: efficient accumulation, analysis, and visualisation of full-waveform lidar**, M. Miltiadou, M.G. Grant, N.D.F. Campbell, M. Warren, D. Clewley, D. G. Hadjimitsis, *SPIE - International Society for Optics and Photonics*, Seventh International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2019), vol. 111741 [doi: 10.1117/12.2537915](https://doi.org/10.1117/12.2537915)

## **2018:**

- **Detection of dead standing eucalypt trees without tree delineation for managing biodiversity in native Australian forest**, M. Miltiadou, N.D.F. Campbell, S. Gonzalez Aracil, T. Brown, M. Grant, *ELSEVIER International Journal of Applied Earth Observation and Geoinformation* (Impact Factor: 5.933) [doi: 10.1016/j.jag.2018.01.008](https://doi.org/10.1016/j.jag.2018.01.008)
- **Detection of marine fronts: a comparison between different approaches applied on the SST product derived from Sentinel-3 data**, M. Miltiadou, C. Papoutsas, V. Karathanassi, P. Kolokoussis, V. Lafon, D. Sykas, A. Sarelli, M. Prodromou, D. Hadjimitsis, *SPIE Library*, Seventh International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2018), vol. 10773 [doi: 10.1117/12.2324126](https://doi.org/10.1117/12.2324126)
- **A novel automated methodology that estimates the United Nations (UN) Sustainable Development Goal (SDG) 14.1. 1.: index of coastal eutrophication using the Copernicus Marine Environment Monitoring Service (CMEMS)**. Sarelli, A., Sykas, D., Miltiadou, M., Bliziotis, D., Spastras, Y., & Ieronymaki, M. (2018, August). In Sixth International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2018) (Vol. 10773, p. 1077302). International Society for Optics and Photonics. [doi: 10.1117/12.2326160](https://doi.org/10.1117/12.2326160)
- **A semantic representation of EO data for image retrieval based on natural language queries**. M. Polignano, M. De Gemmis, V. Kopsacheilis, M. Vaitis, J. Malig, D. Grether, I. Ioannou, A. Sarelli, V. Pasquale, S. Samarelli, K. Karamvassilis, M. Miltiadou, C. Pappoutsas, O. Regnier, V. Lafon, K. Topouzelis, & B. Despotov (2018, August). In Sixth International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2018) (Vol. 10773, p. 1077306). International Society for Optics and Photonics.

#### **2017:**

- **Efficient Accumulation, Analysis and Visualisation of Full-Waveform LiDAR in a Volumetric Representation with Applications to Forestry.** Author: Miltiadou, M., Advisors: M. G. Grant, M. Brown, N. D. F. Cambell and D. Cosker, University of Bath, UK

#### **2016:**

- **Improving and optimising visualisations of full-waveform LiDAR data,** M. Miltiadou, N.D.F Campbell, M. Brown, D.Cosker, and M. Grant, *Eurographics UK in Computer Graphics and Visual Computing* [doi:10.2312/cgvc.20161295](https://doi.org/10.2312/cgvc.20161295)

#### **2015:**

- **Alignment of hyperspectral imagery and full-waveform LiDAR data for visualisation and classification purposes,** M. Miltiadou, M. A. Warren, M. Grant, and M. Brown, *The International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences* vol. 40, no. 7, p. 1257 [doi:10.5194/isprsarchives-XL-7-W3-1257-2015](https://doi.org/10.5194/isprsarchives-XL-7-W3-1257-2015)

#### **2014:**

- **Reconstruction of a 3D Polygon Representation from full-waveform LiDAR data.** *RSPSoc conference*, M. Miltiadou, M. Grant, M. Brown, M. Warren, & E. Carolan (2014).