CV MIGUEL VILLOSLADA

1. Personal details and the date of the CV

- Villoslada Peciña
- Miguel
- ORCID ID: https://orcid.org/0000-0001-7777-6577

- Date of the CV: 09/05/2022

2. Degrees

- (01.09.2015 – 18.06.2020) PhD in Environmental Sciences and Applied Biology. PhD dissertation: "A tiered framework for mapping and assessing ecosystem services from semi-natural grasslands: expert-based assessments, proxy indicators and UAV surveys". Institution: Estonian University of Life Sciences. Tartu, Estonia. Fr.R.Kreutzwaldi 1, 51006, Tartu, Estonia. Phone +372 731 3001 (Mon-Fr 8.00-16.30)
- (01.09.2003 – 31.08.2008) Licentiate in Environmental Sciences. Universidad de Alcalá, Spain). Licentiate dissertation: "Allometries and distribution assessment of key Mediterranean tree species". Institution: Universidad de Alcalá.

3. Other education and expertise

- September, 2019. Advanced Training School on Remote Sensing/Earth Observation. Võru, Estonia. Scope: Training on various remote sensing techniques, utilizing diverse sources, from radar to thermal IR and optical. Provider: University of Tartu Observatory.
- 30th Jul-4th Aug, 2018. UAV summer school. Tartu, Estonia. Scope, Learning the basic techniques and tools for UAV flight planning and execution, image processing and a strong focus on structure-from-motion. Provider: Department of Geography, University of Tartu.
- 22nd-23rd Aug, 2015. GuidosToolbox workshop: image pattern, connectivity, and fragmentation. During the course, Guidos was presented, along with the main capabilities and implementation in landscape fragmentation asessments. Provider: IUFRO. Tartu, Estonia.

4. Language skills

- Native language: Spanish
- English (according to the Europass self-assessment): C2 for understanding, speaking and reading.
- Portuguese (according to the Europass self-assessment): B1 for understanding, A2 for speaking and reading

- Estonian (according to the Europass self-assessment):A1 for understanding andreading.

5. Current employment

- *01.06.2021 – 31.12.2023* Postdoctoral Researcher. University of Eastern Finland. Department of Geographical and Historical Studies. Digital Geosciences Lab. (Joensuu, Finland). Activities: Dr. Villoslada currently participates in three projects: LANDMOD, H2020 CHARTER and IBC-Carbon. His main tasks include the collection of UAV and satellite data, machine learning modeling, construction of species distributions models, and assessment of Climate Change impacts in tundra ecosystems. Miguel Villoslada also develops teaching activities in three modules: Advance GIS modeling, Remote Sensing and Physical Geography.
- Stage of the academic research career: 3rd stage (independent research and education professionals).

6. Previous work experience

- *18.06.2020 – 01-06.2021* Chief Specialist. Estonian University of Life Sciences. Institute of Agricultural and Environmental Sciences. Chair of Environmental Protection and Landscape Management. (Tartu, Estonia). Activities: As a Chief Specialist, the applicant was mostly focused in research and project coordination. In addition, the applicant led, coordinated and supervised the activities of the Remote Sensing Lab under the Chair of Environmental Protection and Landscape Management. The activities under the Remote Sensing Lab are mostly dedicated to UAV-based monitoring of the environment. The applicant also developed teaching activities in two modules: European Environmental Databases and Ecosystem Services.

- *31.08.2015 – 18.06.2020 Junior researcher*. Estonian University of Life Sciences. Institute of Agricultural and Environmental Sciences. Chair of Environmental Protection and Landscape Management (Tartu, Estonia). Activities: As a Junior researcher, the applicant carried research activities oriented to the fields of ecosystem services, spatial data and remote sensing. The applicant also undertook project coordination activities. As part of the project activities, the applicant has been actively involved in the policy-science interface. In addition, the applicant carried teaching activities in the European Environmental Databases and Ecosystem Services courses.
- *28.08.2018 – 31.01.2020 Spatial data consultant*. Aether Consulting. Activities: Support the use of EU Copernicus datasets in Land Use, Land Use Change and Forestry (LULUCF). The applicant reviewed Copernicus spatial databases and outlined workflows for their potential use within the LULUCF accounting requirements.
- *01.03.2017 - 01.05.2017 Module leader*. University of Cumbria. Ambleside Campus (Ambleside, UK). Activities: Module leader and lecturer, advanced Geographical Information Systems. The applicant developed and taught a course on advanced GIS, including introduction to GIS tools, practical cases and problem-solving oriented exercises.
- *01.09.2009 – 31.08.2015 Specialist*. Estonian University of Life Sciences. Institute of Agricultural and Environmental Sciences. Chair of Environmental Protection and Landscape Management. Activities: Participation in EU funded projects. As a

specialist, the applicant developed his work in the fields of spatial ecology and Geographic Information Systems applied to environmental management.

7. Career breaks

- No career breaks

8. Research funding and grants

- 01.02.2023 – 01.02.2024. QR and RCIF funds of the University of Salford in Manchester. Climate change and willow encroachment in Arctic wetlands: Herbivory effects on gene expression and long-term adaptation to grazing. PIs: Mariana do Amaral Lima, Miguel Villoslada. Funded quantity: 30 334 €

- 01.01.2022-21.12.2022. Proof-of-Concept grant, Estonian Research Council (grant nr. EAG204). Innovative drone-based remote sensing tools for agricultural management and nature conservation. PI: Miguel Villoslada. Funded quantity: 99 625 €.

- 1.01.2020–31.12.2020. P190251PKKK (EMÜ nõukogu otsus 19.12.2019 nr 1-4/60) "Impacts of global environmental change on Estonian coastal ecosystem services ", 30 000€. PI: Raymond Ward, Estonian University of Life Sciences, Institute of Agricultural and Environmental Sciences, Chair of Environmental Protection and Landscape Management. Miguel Villoslada co-wrote the application with RaymondWard.
- 01.09.2015-01.09.2019 Institutional research funding IUT21-1 at the Estonian Ministry of 619 Education and Research, Estonia. Basic funding for PhD studies. Co- written application Kalev Sepp, Miguel Villoslada.
- 01.08.2019-31.07.2023 Interreg Europe. IRENES – "Integrating RENewable energy and Ecosystem Services in environmental and energy policies". Funded quantity for Estonian University of Life Sciences: 100 000 €. Co-written in collaboration with several partners from the EU. PI: Elena Gissi, University of Venice.
- 01.01.2019-31.07.2020 ELME." Elurikkuse sotsiaal-majanduslikult ja kliimamuutustega seostatud keskkonnaseisundi hindamiseks, prognoosiks ja andmete kättesaadavuse tagamiseks vajalikud töövahendid" MAES Estonia: Mapping and Assessment of Ecosystem Services in Estonia. State-funded grant. Proposal written by Miguel Villoslada. Project Co-coordinate by Kalev Sepp and Estonian Environmental Agency;
- 01.09.2018-31.12.2019 LIFE17 CCA/EE/000122. LIFE UrbanStorm. "Development of sustainable and climate resilient urban storm water management systems for Nordic municipalities". PI: Valdo Kuuseemets, Estonian University of Life Sciences.
- 01.04.2017-28.02.2020 PM170151VLVS; 6HMX190023VLST "Grazing behaviour of Estonian native sheep breeds and its effect on conservation of semi-natural communities (1.04.2017–28.02.2020)", PI: David Arney, Estonian University of Life Sciences, Institute of Veterinary Medicine and Animal Sciences. Miguel Villoslada wrote a section dealing with UAV monitoring of grazing environments.
- 01.06.2014-01.04.2019 LIFE13 ENV/LT/000189. LIFE Viva Grass. "Integrated planning tool to ensure viability of seminatural grasslands". PI: Sigmatas Morkvenas, Baltic Environmental Forum Latvia. Miguel Villoslada Co-wrote the application with partners.
- 01.06.2014-30.12.2015 8-2/T14098PKMH "Development of methods for assessmentand mapping of ecosystem services of marine and inland waters (1.06.2014–30.12.2015)",

PI: Kalev Sepp, Estonian University of Life Sciences,Estonian University of Life Sciences, Institute of Agricultural and Environmental Sciences. Miguel Villoslada co-wrote the application with Kalev Sepp.

- 01.02.2015-31.07.2018 Grant agreement No 642007. Horizon 2020 ESMERALDA. "Enhancing ecoSysteM sERvices mApping for poLicy and Decision mAking". PI: Benjamin Burkhard, Leibniz Universität Hannover.
- 01.11.2010-31.1-.2013 SFE29 Interreg Central Baltic. COMCOT. "An innovative tool for improving the competitiveness of community based tourism".PI: Lea Sudakova, Estonian University of Life Sciences.

9. Research output

A Peer-reviewed scientific articles

- Bergamo, T., Sampaio, R., Kull, T., Ward, R.D., Sepp, K. & **Villoslada, M.** (*Currently under revision*). From UAV to PlanetScope: Upscaling fractional cover of an invasive species Rosa rugosa. Journal of Environmental Management. JUFO level 1. Publication type A1.
- **Villoslada, M.**, Ylänne, H., Juutinen, S., Kolari, T., Korpelainen, P., Tahvanainen, T., Wolff, F., Kumpula, T. (*Currently under revision*). Reindeer control over shrubification in subarctic wetlands: Spatial analysis based on UAV imagery. Remote Sensing in Ecology and Conservation. JUFO level 2. Publication type A1.
- Bergamo, T. F., Ward, R. D., Joyce, C. B., **Villoslada, M.**, & Sepp, K. (2022). Experimental climate change impacts on Baltic coastal wetland plant communities. Scientific Reports, 12(1), 20362. doi: s41598-022-24913-z. JUFO level 1. Publication type A1.
- **Villoslada, M.**, Sipelgas, L., Bergamo, T. F., Ward, R. D., Reintam, E., Astover, A., ... & Sepp, K. (2022). Multi-source remote sensing data reveals complex topsoil organic carbon dynamics in coastal wetlands. Ecological Indicators, 143, 109329. doi: 10.1016/j.ecolind.2022.109329. JUFO level 1. Publication type A1.
- Stępniewska, M., Grunewald, K., **Villoslada, M.**, & Mizgajski, A. (2022). The various faces of transdisciplinarity in research on ecosystem services: Editorial to Special Issue. Ecosystem Services, 56, 101451. doi: 10.1016/j.ecoser.2022.101451. JUFO level 2. Publication type A1.
- Celis-Hernandez, O., **Villoslada, M.**, Ward, R. D., Bergamo, T. F., Perez-Ceballos, R., & Girón-García, M. P. (2022). Impacts of environmental pollution on mangrove phenology: Combining remotely sensed data and generalized additive models. Science of The Total Environment, 810, 152309. doi: 10.1016/j.scitotenv.2021.152309. JUFO level 2. Publication type A1.
- de Lima, R. S., Lang, M., Burnside, N. G., **Villoslada, M.**, Arumäe, T., Laarmann, D., ... & Sepp, K. (2021). An Evaluation of the Effects of UAS Flight Parameters on Digital Aerial Photogrammetry Processing and Dense-Cloud Production Quality in a Scots Pine Forest. Remote Sensing, 13(6), 1121. doi: 10.3390/rs13061121. JUFO level 1. Publication type A1.
- Li, K. Y., Burnside, N. G., de Lima, R. S., **Villoslada, M.,** Sepp, K., Cabral Pinheiro, V. H., ... & Sepp, K. (2021). An automated machine learning framework in unmanned aircraft systems: new insights into agricultural management practices recognition approaches.

Remote Sensing, 13(16), 3190. doi: 10.3390/rs13163190. JUFO level 1. Publication type A1.

- Li, K. Y., Burnside, N. G., Sampaio de Lima, R., Villoslada, M., Sepp, K., Yang, M. D., ... & Sepp, K. (2021). The application of an unmanned aerial system and machine learning techniques for red clover-grass mixture yield estimation under variety performance trials. Remote Sensing, 13(10), 1994. doi: 10.3390/rs13101994. JUFO level 1. Publication type A1.
- Martínez Prentice, R., Villoslada, M., Ward, R. D., Bergamo, T. F., Joyce, C. B., & Sepp, K. (2021). Machine learning classification and accuracy assessment from high-resolution images of coastal wetlands. Remote Sensing, 13(18), 3669. doi: 10.3390/rs13183669. JUFO level 1. Publication type A1.
- Villoslada, M., Bergamo, T., Ward, R., Joyce, C., & Sepp, K. (2021). A novel UAV- based approach for biomass prediction and grassland structure assessment in coastal meadows. Ecological Indicators, 122, 107227. doi:10.1016/j.ecolind.2020.107227. JUFO level 1. Publication type A1.
- Bunce, R. G. H., Pungar, D., Villoslada, M., Raet, J., Kaart, T., & Sepp, K. (2020). A survey of habitats on agricultural land in Estonia: I Construction and validation of the database using the botanical field data. Global Ecology and Conservation, e01007. doi: 10.1016/j.gecco.2020.e01007. JUFO level 1. Publication type A1.
- Villoslada, M., Bergamo, T. F., Ward, R. D., Burnside, N. G., Joyce, C. B., Bunce, R. G. H., & Sepp, K. (2020). Fine scale plant community assessment in coastal meadows using UAV based multispectral data. Ecological Indicators, 111, 105979. doi: 10.1016/j.ecolind.2019.105979. JUFO level 1. Publication type A1.
- Vinogradovs, I., Villoslada, M., Nikodemus, O., Ruskule, A., Veidemane, K., Gulbinas, J., ... & Kryžanauskas, A. (2020). Integrating ecosystem services into decision support for management of agroecosystems: Viva Grass tool. One Ecosystem, 5, e53504. doi: 10.3897/oneeco.5.e53504 . JUFO level 1. Publication type A1.
- Burkhard, B., Maes, J., Potschin-Young, M., Santos-Martín, F., Geneletti, D., Stoev, P.,... & Zulian, G. (2018). Mapping and assessing ecosystem services in the EU-Lessons learned from the ESMERALDA approach of integration. One Ecosystem, 3. doi: 10.3897/oneeco.3.e29153. JUFO level 1. Publication type A1.
- Poska, A., Väli, V., Tomson, P., Vassiljev, J., Kihno, K., Alliksaar, T., Villoslada, M., Saarse, L. & Sepp, K. (2018). Reading past landscapes: combining modern and historical records, maps, pollen-based vegetation reconstructions, and the socioeconomic background. Landscape ecology, 33(4), 529-546. doi: 10.1007/s10980-018-0615-2. JUFO level 2. Publication type A1.
- Villoslada, M., Vinogradovs, I., Ruskule, A., Veidemane, K., Nikodemus, O., Kasparinskis, R., Sepp, K. & Gulbinas, J. (2018). A multitiered approach for grassland ecosystem services mapping and assessment: The Viva Grass tool. One Ecosystem, 3, e25380. doi: 10.3897/oneeco.3.e25380. JUFO level 1. Publication type A1.
- Villoslada, M., Bunce, R. G., Sepp, K., Jongman, R. H., Metzger, M. J., Kull, T., Raet, J., Kuusemets, V., Kull, A. & Leito, A.† (2017). A framework for habitat monitoring and climate change modelling: construction and validation of the Environmental Stratification of Estonia. Regional environmental change, 17(2), 335-349. doi: 10.1007/s10113-016-1002-7. JUFO level 2. Publication type A1.

- Kull, T., Selgis, U., **Villoslada, M.**, Metsare, M., Ilves, A., Tali, K., ... & Shefferson, R. P. (2016). Factors influencing IUCN threat levels to orchids across Europe on the basis of national red lists. Ecology and Evolution, 6(17), 6245-6265. doi: 10.1002/ece3.2363. JUFO level 1. Publication type A1.
- Leito, A., Bunce, R. G. H., Külvik, M., Ojaste, I., Raet, J., **Villoslada, M.**, ... & Metzger,M. J. (2015). The potential impacts of changes in ecological networks, land use and climate on the Eurasian crane population in Estonia. Landscape Ecology, 30(5), 887- 904. doi: 10.1007/s10980-015-0161-0. JUFO level 2. Publication type A1.

B Non-refereed scientific articles

- Külvik, M.; Kliimask, J.; Niin, G.; Vassiljev, P.; **Villoslada, M**.; Hansson, K. (2017). Landscape scenarios for Saaremaa island: making heritage operational. In: Pungetti, G. (Ed.). Island Landscapes: An Expression of European Culture (213–224). London and New York: Routledge.

C Scientific books, Conference proceedings

- Villoslada, M. (2019). The path towards MAES Estonia: Remote sensing as a tool to assess spatio-temporal dynamics of ecosystem services. ESP World Conference Proceedings, Hannover, Germany, 21-25 October 2019. ESP World Conference 2019: 10 years advancing ecosystem services science, policy and practice for a sustainable future.
- Villoslada, M., Bergamo, T.F., Ward, R.D. (2019). The role of UAV based multispectral data for fine scale plant community mapping and assessment in high ecosystem service value coastal meadows. EGU 2019 Conference Proceedings, Vienna, Austria, 7-12 April 2019.
- Villoslada, M. (2018). From expert-based assessments to UAV-born images: a tiered framework for semi-natural grassland ecosystem services. ESP Europe Conference Proceedings, San Sebastian, Spain, 15-19 October 2018. ESP Europe 2018 Regional Conference. Ecosystem Services in a changing world: Moving from theory to practice.
- Villoslada, M. (2018). Mapping and assessment of grassland ecosystem services in the Baltic States: The Viva Grass tool. Proceedings of EcoServ 2018, Poznan, Poland, 17- 19 September 2018. 5th scientific symposium ecosystem services in transdisciplinary approach.
- Villoslada, M.; Sepp, K.; Bunce, R. G. H.; Ward, R. D.; Raet, J. (2017). Assessment of ecosystem services provided by semi-natural grasslands as a basis for promoting conservation measures. Proceedings of IALE 2017: IALE 2017 European Landscape Ecology Congress - From pattern and process to people and action, Ghent, Belgium, 12-15 September 2017. IALE-Europe.
- Villoslada, M.; Vinogradovs, I.; Gulbinas, J.; Morkvenas, Z.; Ruskule, A.; Veidemane, K.; Kuris, M.; Remmelgas, L.; Sepp, K. (2017). Viva Grass experience: mapping and identifying grassland ES. LIFE platform meeting on ecosystem services - Costing the Earth?, Estonia, Tallinn, 10-12 May 2017. Baltic Environmental Forum,.
- Villoslada, M.; Ward, R. D.; Bunce, R. G. H.; Sepp, K. (2017). Assessment of ecosystem services provided by semi-natural grasslands as a basis for promoting conservation measures. ESP 9 Conference Proceedings: ecosystem Services Partnership – 9th World Congress, Shenzhen, China, 11 – 15/12/2017. Ecosystem Services Partnership,.

- Villoslada, M.; Bunce, R. G. H.; Sepp, K. (2016). A functional framework design for ecosystem service mapping and assessment in Estonia. Proceedings of PALE 2016: Ecosystem Services - Landscape Ecology Integrative Role; Łochów, Poland; 22 – 24/06/2016. Ed. Polish Association of Landscape Ecology. Polish Association of Landscape Ecology,.
- Villoslada, M.; Bunce, R. G. H.; Sepp, K. (2015). Coastal landscapes in Estonia and threats to the provision of ecosystem services. Proceedings of IALE UK 2015: Seascape ecology - connecting land, sea and society; Edinburgh, UK; 07 -09/09/2015.IALE UK,.

G Theses

- Villoslada Peciña, M. (2020). A tiered framework for mapping and assessing ecosystem services from semi-natural grasslands: expert-based assessments, proxy indicators and uav surveys. PhD Dissertation. Estonian University of Life Sciences, Tartu, Estonia.

10. Research supervision and leadership experience

MSc dissertations supervised by Dr. Villoslada:

- Laroche, V., (2019). Making urban stormwater management more sustainable. A case study of Tallinn, Estonia. Lund University, Lund, Sweden.
- Remmelgas, L., (2020). The resilience of Tallinn's urban landscapes to a changing climate: land use and its impact on climate change vulnerability. MsC dissertation, Estonian University of Life Sciences, Tartu, Estonia.

PhD dissertations currently being supervised by Dr. Villoslada:

- 01.01.2023 - … Kadri Erit. Redirecting recreational users from protected areas. Estonian University of Life Sciences, Tartu, Estonia.
- 01.09.2021 - ... Kaskevich, V. Indicators for green and blue infrastructure conditions in coastal wetland ecosystem implementing remote sensing and GIS. Estonian University of Life Sciences, Tartu, Estonia.
- 01.09.2021 - ... Rodrigues Morgado, M. The provision of coastal wetland ecosystem services: the impact of global change. Estonian University of Life Sciences, Tartu, Estonia.
- 01.09.2020 - … Martinez Prentice, R. Biodiversity and Ecosystem Services of Coastal Wetlands. Estonian University of Life Sciences, Tartu, Estonia.
- 01.09.2019 - … Kokamägi, K. The application of Remote Sensing for proactive planning of green and blue infrastructure for mitigating increased urban heat islands. Estonian University of Life Sciences, Tartu, Estonia. Leadership experience in research groups or projects (specify the job description, for example instructing post-doctoral researchers)

Other leadership positions

- Dr. Villoslada co-organized the international conference *Third ESP Europe Conference: Ecosystem Services Science, Policy and Practice in the face of Global Changes.* Tartu, Estonia. 7 – 10 June, 2021.

- Dr. Villoslada has organized several fieldwork expeditions for UAV data collection, soil moisture sampling and coring and plant species identification in coastal wetlands. The fieldworks have taken place in different locations in North and West Estonia during three consecutive years: 2018, 2019, 2020 and 20222.

- Dr. Villoslada is currently leading the Estonian partnership within the Interreg EU project IRENES – "Integrating RENewable energy and Ecosystem Services in environmental and energy policies".
- Co-chaired session: Session T4b: The power of ecosystem services maps for transformative change. ESP Europe Conference, Heraklion, Crete, 12 October 2022.

- Co-chaired session: Session T4c: Innovation in ES mapping: Sharing experiences from spatial analysis, visualization, communication and user engagement. ESP Europe Conference, Tartu, Estonia, 10 June 2021.
- Co-chaired session: Session T4a: Times are changing; temporal mapping of dynamic ecosystem services. ESP World Conference, Hannover, Germany, 24 October 2019.
- Co-chaired session: Session T14a: Ways of embedding the concept of ecosystem services into decision-making processes for better agricultural land management. ESP Europe Regional Conference, San Sebastian, Spain, 17 October 2018.

11. Teaching merits

- In the University of Eastern Finland, Dr. Villoslada has taught the following courses (aimed at both Bachelor and Master students):

    - Research and field methods in physical geography and geoinformatics Remote Sensing.

    - Ympäristön tilan seurantajärjestelmät ja –menetelmät.

    - Kaukokartoitus maankäytön tutkimuksessa.

    - Luonnonmaantieteen prosessit.

- Dr. Villoslada co-wrote the teaching materials created within LIFE VivaGrass project (link), including lessons and practical trainings in the field of ecosystem services.
- In the Estonian University of Life Sciences, Dr. Villoslada has taught the following courses (aimed at both Bachelor and Master students):
    - European Environmental Databases
    - Ecosystem Services
- 01.03.2017 - 01.05.2017 Module leader. University of Cumbria. Ambleside Campus (Ambleside, UK). Activities: Module leader and lecturer, advanced Geographical Information Systems. The applicant developed and taught a course on advanced GIS, including introduction to GIS tools, practical cases and problem-solving oriented exercises.

12. Awards and honors

- Estonian Academy of Sciences Award: 1st price for the best PhD Thesis in Environmental Sciences. Awarded in December 2020.

13. Other key academic merits, such as:

- Dr. Villoslada was an expert in the evaluation panel for PhD candidate in 2020 and 2021.
- Dr. Villoslada is a member of the lead team of the Mapping Ecosystem Services Working Group of the Ecosystem Services Partnership.
- Topic Editor in Remote Sensing (MDPI).
- Dr. Villoslada has reviewed scientific in several journal, including, among others: STOTEN, One Ecosystem, Ecosystem Services and Ecological Indicators.
- Keynote speech: Villoslada, M., (2019). A multifunctional perspective of urban green networks. Smart Green & Smart Blue: exploring nature-based solutions and ecosystem services approaches in environmental management, planning & policy, Lviv, Ukraine, 7-9 November 2019.
- Course: Villoslada, M. (2019). Methods for mapping ecosystem services at multiple scales: The role of remote sensing. Short course in mapping and modelling the environment at different scales. EGU. Convener: Paulo Pereira. Vienna, Austria, 8 April 2019.
- Dr. Villoslada was a lead member of the organizing committee of the 3rd Ecosystem Services Partnership (ESP) Europe Conference: Ecosystem Services Science, Policy and Practice in the face of Global Changes. The conference will be held in Tartu Estonia (to be held 7-10 June 2021).

14. Scientific and societal impact

- The applicant has actively taken part in outreach events at the Estonian University of Life Sciences, namely: University Open Days and the Researchers Night Festival. At these events, the applicant has presented the latest advances in remote sensing and 3D landscape modelling to the general public, including schools and high schools.

The publications are listed in chronological order:

Bergamo, T., Sampaio, R., Kull, T., Ward, R.D., Sepp, K. & **Villoslada, M.** (2023). From UAV to PlanetScope: Upscaling fractional cover of an invasive species Rosa rugosa. Journal of Environmental Management. JUFO level 1. Publication type A1.

Inácio, M., Barboza, F. R., & **Villoslada, M.** (2023). The protection of coastal lagoons as a nature-based solution to mitigate coastal floods. Current Opinion in Environmental Science & Health, 100491. JUFO level 1. Publication type A1.

Villoslada, M., Ylänne, H., Juutinen, S., Kolari, T., Korpelainen, P., Tahvanainen, T., Wolff, F., Kumpula, T. (2023). Reindeer control over shrubification in subarctic wetlands: Spatial analysis based on UAV imagery. Remote Sensing in Ecology and Conservation. JUFO level 2. Publication type A1.

Wolff, F., Kolari, T. H., **Villoslada, M.**, Tahvanainen, T., Korpelainen, P., Zamboni, P. A., & Kumpula, T. (2023). RGB vs. Multispectral imagery: Mapping aapa mire plant communities with UAVs. Ecological Indicators, 148, 110140. JUFO level 1. Publication type A1.

Bergamo, T. F., Ward, R. D., Joyce, C. B., **Villoslada, M.**, & Sepp, K. (2022). Experimental climate change impacts on Baltic coastal wetland plant communities. Scientific Reports, 12(1), 20362. doi: s41598-022-24913-z. JUFO level 1. Publication type A1.

Villoslada, M., Sipelgas, L., Bergamo, T. F., Ward, R. D., Reintam, E., Astover, A., ... & Sepp, K. (2022). Multi-source remote sensing data reveals complex topsoil organic carbon dynamics in coastal wetlands. Ecological Indicators, 143, 109329. doi: 10.1016/j.ecolind.2022.109329. JUFO level 1. Publication type A1.

Stępniewska, M., Grunewald, K., **Villoslada, M.**, & Mizgajski, A. (2022). The various faces of transdisciplinarity in research on ecosystem services: Editorial to Special Issue. Ecosystem Services, 56, 101451. doi: 10.1016/j.ecoser.2022.101451. JUFO level 2. Publication type A1.

Celis-Hernandez, O., **Villoslada, M.**, Ward, R. D., Bergamo, T. F., Perez-Ceballos, R., & Girón-García, M. P. (2022). Impacts of environmental pollution on mangrove phenology: Combining remotely sensed data and generalized additive models. Science of The Total Environment, 810, 152309. doi: 10.1016/j.scitotenv.2021.152309. JUFO level 2. Publication type A1.

de Lima, R. S., Lang, M., Burnside, N. G., **Villoslada, M.**, Arumäe, T., Laarmann, D., ... & Sepp, K. (2021). An Evaluation of the Effects of UAS Flight Parameters on Digital Aerial Photogrammetry Processing and Dense-Cloud Production Quality in a Scots Pine Forest. Remote Sensing, 13(6), 1121. doi: 10.3390/rs13061121. JUFO level 1. Publication type A1.

Li, K. Y., Burnside, N. G., de Lima, R. S., **Villoslada, M.,** Sepp, K., Cabral Pinheiro, V. H., ... & Sepp, K. (2021). An automated machine learning framework in unmanned aircraft systems: new insights into agricultural management practices recognition approaches. Remote Sensing, 13(16), 3190. doi: 10.3390/rs13163190. JUFO level 1. Publication type A1.

Li, K. Y., Burnside, N. G., Sampaio de Lima, R., **Villoslada, M.**, Sepp, K., Yang, M. D., ... & Sepp, K. (2021). The application of an unmanned aerial system and machine learning techniques for red clover-grass mixture yield estimation under variety performance trials. Remote Sensing, 13(10), 1994. doi: 10.3390/rs13101994. JUFO level 1. Publication type A1.

Martínez Prentice, R., **Villoslada, M.**, Ward, R. D., Bergamo, T. F., Joyce, C. B., & Sepp, K. (2021). Machine learning classification and accuracy assessment from high-resolution images of coastal wetlands. Remote Sensing, 13(18), 3669. doi: 10.3390/rs13183669. JUFO level 1. Publication type A1.

Villoslada, M., Bergamo, T., Ward, R., Joyce, C., & Sepp, K. (2021). A novel UAV- based approach for biomass prediction and grassland structure assessment in coastal meadows. Ecological Indicators, 122, 107227. doi:10.1016/j.ecolind.2020.107227. JUFO level 1. Publication type A1.

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PORTFOLIO OF TEACHING MERITS

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for the position of Associate Professor at the University of Eastern Finland

Candidate: Miguel Villoslada Peciña

1. PERSONAL DATA AND DEGREES

Pedagogical training

During my PhD studies, I undertook the course entitled "Learning and Teaching in Higher Education" (6 ECTS, University of Tartu, Estonia, 2015). The course was taught by Prof. James Groccia (Professor of Higher Education at Auburn University). Course participants were guided to think about their philosophy of teaching. The course presented theoretical, empirical and best practice models in Higher Education, understanding of learning processes and learning context, course content development, and models for instructional processes.

Physical Geography in Higher Education: Philosophy and vision

My general teaching approach builds on enhancing students' intrinsic motivation (boosting curiosity on the topic) and external motivation (providing constructive feedback). Whenever possible, I try to promote social accomplishment through the creation of group work and peer-based discussion. On group work, I am fond of active learning strategies, mostly real case studies and simulations where students learn not only the tools and skills, but also get familiar with the background information (e.g. Development of Geographic Information Systems tools and skills to choose the location for a windfarm, while learning on the socio-ecological characteristics and conflicts of the area under study). I also encourage cooperation among students, in opposition to individualistic learning, as I believe it improves understanding and thinking. Given the chance, I apply the RPVRP (Review-Preview-View-Review-Preview) model in each class. This has been especially useful when teaching challenging spatial data systems and languages. Finally, I understand teaching and research as two integral elements of the same entity. Consequently, I try to keep the students updated with the team's research activities through practical tasks.

One of the particularities of teaching Physical Geography (and related courses) at the University of Eastern Finland is the fact of addressing students from Subject Studies in Geography for teachers. I personally undertake this as an additional commitment and responsibility, as these students will be the "vehicle" of geographical knowledge for future generations.

2. TEACHING AND INSTRUCTION EXPERIENCE

Experience in University teaching

- Research and field methods in physical geography and geoinformatics. (University of Eastern Finland, Leibniz University Hannover, Estonian University of Life Sciences, 10 ECTS, academic years 2021-2022, 2022-2023). Here I teach various field and computer lab methods.

- Ympäristön tilan seurantajärjestelmät ja –menetelmät (University of Eastern Finland, 5 ECTS, academic year 2022-2023). Within this course I teach the lecture entitled *Coastal ecosystems and ecosystem monitoring,* which encompasses basic notions of coastal ecology, as well as an in-depth view of monitoring methods and datasets. The course also includes a practical training session in which students explore EU Copernicus databases.

- Kaukokartoitus maankäytön tutkimuksessa (University of Eastern Finland, 5 ECTS, academic years 2021-2022, 2022-2023). In this course I teach on the topic of *advanced classification techniques in*

remote sensing. Besides the theory lectures, I guide two practical trainings on the use of machine learning for remote sensing classification and regression. The students learn basic coding skills in R programming language.

- Luonnonmaantieteen prosessit (University of Eastern Finland, 5 ECTS, academic years 2021-2022, 2022-2023). In this course I teach on the topic of *ecosystem services trade-offs, synergies and drivers of change*. Together with colleague Laura Poikolainen, we have designed a set of training activities consisting of:

    - A fieldtrip and a photo-elicitation analysis of ecosystem services. Students use photos and keywords to describe the supply of ecosystem services through a selection of landscapes representing various stages of nature conservation, management, and restoration in the surroundings of Joensuu. The aim of the exercise is to promote the understanding of geo-biophysical processes underpinning ecosystem services, and to boost communication skills.

    - A collaborative mapping exercise, in which students use a large printed map to pin the location of ecosystem services in Joensuu. The exercise is done in groups, therefore promoting discussion and a spatially-explicit understanding of ecosystem services supply.

- Ecosystem Services (Estonian University of Life Sciences, 3 ECTS, academic year 2019-2020). I co-designed this course together with Siiri Külm and Prof. Kalev Sepp. Within the course I taught introduction to the basic concepts of ecosystem services, methods for mapping and assessment of ecosystem services and drivers of change. I used a combination of research-oriented methods and real-world case studies. Through a number of hands-on exercises, students were able to assess different scenarios of change in the supply of ecosystem services, and familiarize with the concepts of trade-offs and synergies.

- Environmental Databases (Estonian University of Life Sciences, 2 ECTS, academic years 2017-2018, 2018-2019, 2019-2020). I co-designed this course together with Prof. Kalev Sepp. My teaching duties included a lecture on European Environmental Databases. The overarching goal was getting students aquatinted with open environmental and statistical datasets at the EU level. Students learnt about the need for harmonized monitoring data at the EU level, and the various European Environmental Agency and Copernicus datasets. in a practical exercise, students navigated and queried the databases.

- 01.03.2017 - 01.05.2017 Module leader. University of Cumbria. Ambleside Campus (Ambleside, UK). Activities: Module leader and lecturer, advanced Geographical Information Systems. I fully developed and taught a course on advanced GIS,including introduction to GIS tools, practical cases, and problem-solving oriented exercises. The students were a combination of zoologists, foresters, and nature conservation students. The mixed nature of the group compelled me to develop a set of hands-on exercises that would suit all students.

Thesis supervision experience: MSc theses and internships

- Virginie Laroche (2019). Making urban stormwater management more sustainable. A case study of Tallinn, Estonia. MSc Lund University, Lund, Sweden. The supervision was done in the frame of an internship at the Estonian University of Life Sciences.

- Aiga Spage (2018). Green network, soil permeability and ecosystem services in the city of Tallinn. Analysis integrated in the LIFE Urban Storm Project. Erasmus internship. Motivated by the internship in Estonia, Aiga undertook a second internship in Germany and is currently a PhD candidate in Latvia.

- Laura Remmelgas (2020). The resilience of Tallinn's urban landscapes to a changing climate: land use and its impact on climate change vulnerability. MSc dissertation,Estonian University of Life Sciences, Tartu, Estonia. Laura is currently an adviser in the Climate Department of the Estonian Ministry of Environment. Laura is also head of the climate policy working group designing the Estonian Environmental development plan.

Thesis supervision experience: PhD theses

Since I defended my PhD, I had a keen interest in PhD supervision and mentorship. Although I had already gained some experience supervising MSc theses and internships, I was very attracted by the idea of supporting and helping in the development of doctoral researchers. Consequently, I engaged myself in the co-supervision and selection process of PhD candidates at an early stage of my career. Supervision and mentoring have been thus far incredibly humbling and deeply educational experiences, which I believe, are shaping me as a researcher through a continuous learning process.

The research topics I develop with PhD candidates include a combination of spatial data science, ecosystem services, remote sensing, spatial planning, and nature conservation. I try to provide a holistic understanding of science, avoiding very narrow niches. I see supervision as a teamwork, where co-supervisors and candidates rely on open and honest communication, trust, and creative freedom. Through my collaboration networks, I offer PhD candidates opportunities to get acquainted with other teams and topics, in an attempt to widen their vision of science. As an integral part of the PhD journey, I give prominence to fieldwork as a tool to strengthen teamwork skills, responsibility, and mutual respect.

Hereinafter I provide a list of the PhD theses I co-supervise:

- 01.01.2023 - … Kadri Erit. Redirecting recreational users from protected areas. Estonian University of Life Sciences, Tartu, Estonia.

- 01.09.2021 - ... Volha Kaskevich. Indicators for green and blue infrastructure conditions in coastal wetland ecosystem implementing remote sensing and GIS. Estonian University of Life Sciences, Tartu, Estonia.

- 01.09.2021 - ... Mariana Rodrigues Morgado. The provision of coastal wetland ecosystem services: the impact of global change. Estonian University of Life Sciences, Tartu, Estonia.

- 01.09.2020 - … Ricardo Martinez Prentice. Biodiversity and Ecosystem Services of CoastalWetlands. Estonian University of Life Sciences, Tartu, Estonia. Publications:

    - Martínez Prentice, R., Villoslada, M., Ward, R. D., Bergamo, T. F., Joyce, C. B., & Sepp, K. (2021). Machine learning classification and accuracy assessment from high-resolution images of coastal wetlands. Remote Sensing, 13(18), 3669.

    - Martínez Prentice, R., Villoslada, M., Ward, R. D., Bergamo, & Sepp, K. (202x). Enhancement of Sentinel-2 with UAV-derived data for Plant Community Cover distribution mapping in coastal meadows. Remote Sensing in Ecology and Evolution (Currently under revision).

- 01.09.2019 - … Kaupo Kokamägi. The application of Remote Sensing for proactive planning of green

and blue infrastructure for mitigating increased urban heat islands. Estonian University of Life Sciences, Tartu, Estonia.

Summer schools and conference workshops

As part of the BSc programme *Environmental Sciences,* Wageningen University has organized a summer school in collaboration with the Estonian University of Life Sciences for four years. Within this summer school, entitled *International Study Visits* (3 ECTS), I was a lecturer in *Trade-offs between provisioning of ecosystem services and biodiversity conservation in seminatural habitats (coastal meadows).* As part of my lecture and practical training, students got acquainted with National Parks in Estonia, their conservation value, and the main management conflicts. Using an ecosystem services approach, course participants addressed grasslands' multifunctionality, their history, evolution, and management trends during the last decades. I was a lecturer in the summer school in July 2020 and May 2021.

Later, in June 2021, I co-hosted the Ecosystem Services Partnership European Conference: *Ecosystem Services Science, Policy and Practice in the face of Global Changes* (Tartu, Estonia). In the frame of the conference, I organized the training session *Applications of Remote Sensing for Ecosystem Services assessments.* This hands-on workshop was designed a six-hour session divided in 3 thematic blocks. Course participants learnt how to use various remote sensing software applications and processes.

3. TEACHING METHODS AND PREPARATION OF STUDY MATERIALS

In collaboration with colleagues from the Baltic Environmental Forum and the University of Latvia, I participated in the production of a full course on ecosystem services. The teaching materials included a glossary of terms, a handbook of ecosystem services theory (six chapters), a set of lecture slides, and a set of self-guided practical lessons. All materials are available online and were produced in the frame of LIFE VivaGrass project (https://vivagrass.eu/self-learning-platform/). These materials have been used in the Estonian University of Life Sciences, the University of Latvia and Mykolas Romeris University (Lithuania). More information on my teaching methods can be consulted in the "Teaching and instruction experience" section in this portfolio.

4. OTHER TEACHING MERITS

International experience

As part of my career, I have engaged in various teaching exchange initiatives, with the aim of advancing my teaching skills as well as facing and learning from new groups of students. I have also been invited as a guest lecturer in three occasions. A short description of the activities is provided hereinafter:

- Erasmus+ teaching exchange at the University of Brighton (2019): I provided two lectures to Master's level students on the topics of semi-natural ecosystems, coastal management and ecosystem services assessments.

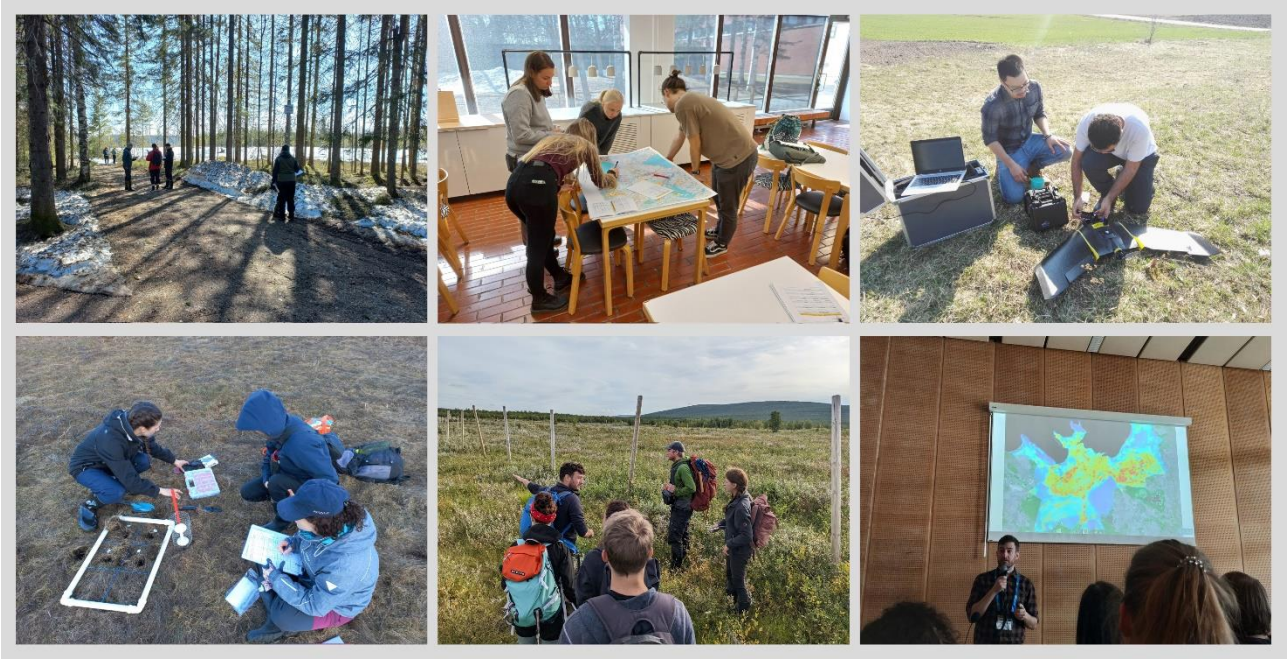
- Erasmus+ teaching exchange at the Leibniz University Hannover (2022): During this exchange, I organized a lecture entitled "Ecosystem Services and Renewable Energy Sources: A pathway for balanced spatial planning". At the end of the lecture, students participated in a roundtable discussion. Additionally, I taught a short practical course (3h) in which students developed their R coding skills

based on hands-on activities and real datasets from palsa mires. The course focused on the development of techniques for the detection of elevation changes. Both activities targeted Master's level students.

- Guest lecture entitled "Overcoming global challenges in mapping and assessment of ecosystem services: The role of Remote Sensing" (online, 2021). This guest lecture was part of the Training and Education series of the Young Ecosystem Services Specialists (YESS Network). The audience was international and highly varied in terms of higher education level, ranging from Bachelor students to PhD candidates.

- Guest lecture entitled "Mapping and assessment of ecosystem services: Challenges in a global environmental context" (Vilnius, 2021). This guest lecture was part of the LINESAM workshop. The audience was a mainly Bachelor and Master´s students, but also included researchers and practitioners (spatial planners and policy makers).

- Guest lecture entitled "Methods for mapping ecosystem services at multiple scales" (Vienna, 2019). This lecture was part of the pre-conference course "Mapping and modelling the environment at different scales" at the European Geosciences Union (EGU) General Assembly 2019. The course was targeted to students of all higher education levels as well as early career researchers.



Sample image summarizing various teaching activities. From left to right and top to bottom: (I) Photo-elicitation exercise in the surroundings of Joensuu in the Luonnonmaantieteen prosessit course, (II) collaborative mapping exercise in the Luonnonmaantieteen prosessit course, (III) training colleagues on the use of Unmanned Aerial Vehicles, (IV) joint/collaborative fieldwork including three PhD candidates in Estonia, (V) practical training activities in the Research and field methods in physical geography and geoinformatics course in Kilpisjärvi, (VI) Guest lecture at the EGU General Assembly 2019.

5. DESCRIPTION OF THE ANNEXES

This teaching portfolio includes three letters of support from an internship student (Aiga Spage) and two PhD candidates (Volha Kaskevich and Mariana Morgado).

Former master study Erasmus+ intern

Latvia University of Life Sciences and Technologies

Faculty of Environment and Civil Engineering

Department of Landscape Architecture and Planning

Mg. Arch, Landscape architect, Aiga Spāģe

Internship feedback

In the year 2018, I was an intern at the Estonian University of Life Sciences in the department of Environmental Protection and Landscape Management under Miguel Villoslada's supervision. At that moment I had just finished my master's studies in Landscape Architecture and as my topic was related to green infrastructure from a more environmental point of view I applied to this department and Miguel Villoslada was my supervisor.

As I am a landscape architect at the beginning, it was challenging for both of us to understand where our professions cross and how to adapt, but together, in discussions and individual work we came up with so many common problems and solutions, and ways how I can learn and Miguel did the same, as my point of view was different. At my internship, I definitely learned so much new about green infrastructure, as Miguel put me up to tasks related to my topic, in addition, I learned how to use GIS software and learned about ecosystem services, which, at that point, was just Miguel's wish to give more knowledge to me. This internship and Miguel's supervision opened new scientific topics for me, which led me to a new internship topic in Germany and at the end to a PhD topic about ecosystem services. Miguel's interest in my well-being and friendly attitude was the main reason this internship was so successful for me and also my positive attitude towards international internships.

Now, as I am a PhD student and my topic is related to ecosystem services I still use the chance to visit Miguel to consult and discuss my PhD topic using Erasmus+ or online. Miguel is one of the most knowledgeable professionals in this field, so his input always is very valuable and not to mention his ability to approach each situation and person individually.

06.02.2023.

Mg.Arch., Aiga Spāģe

Letter of support *14/02/2023*

To whom it may concern,

I am writing to express my strong support for the nomination of my supervisor, Miguel Viloslada Pecina, for the position of Associate Professor. I am currently a Junior Researcher and a Doctoral candidate in Environmental Sciences and Applied Biology at the Chair of Environmental Protection and Landscape Management, Institute of Agricultural and Environmental Sciences, Estonian University of Life Sciences. Miguel has been my supervisor since September 2021.

Miguel has provided excellent guidance and support throughout my research, focusing on Blue-Green Infrastructure based on ecosystem services, a nature-based solution approach, and its inclusiveness in land-use evaluation using geoinformatics and field methods. His expertise in these areas, as well as in strategic planning, methodological approaches, and conceptual development, has been invaluable to my work.

Not only does Miguel possess an impressive depth of knowledge and technical skills in Remote sensing, GIS, statistical analysis, coastal landscapes, ecosystem services, and applied field research methods, but he also has a deep understanding of ecosystem structures and functions and landscape research in general. His strong leadership qualities and capacity for research management have also been evident in our collaboration.

Throughout our two years of working closely together, Miguel has consistently demonstrated his dedication, knowledge, and willingness to collaborate. He is an excellent team player and has always been available and helpful to me.

In light of his exceptional contributions to my research and the broader field of environmental sciences, I strongly support Miguel's nomination for the position of Associate Professor. I would highly recommend him for the role.

Sincerely, Volha Kaskevich 

Mariana Rodrigues Morgado
Junior Researcher & Ph.D. Candidate
Estonian University of Life Sciences
marianarmorgado@gmail.com
20th February 2023

Dear members of the committee,

I am writing to you in order to share my experience as a student under Dr Miguel Villoslada's supervision. I started this Ph.D. project in September of 2021, after a few years outside of the research world. Together with my other supervisors, Professor Kalev Sepp and Dr Raymond Ward, Miguel welcomed me to the team with open arms and I have been supported since the beginning.

As my main supervisor, Miguel has been guiding me more closely. In practical terms, even though he works in Finland, and I work in Estonia, Miguel always finds time for me and his other students. We hold frequent online meetings, and he is always a text away to answer to quick doubts or even discuss some ideas. From time to time, Miguel comes to Estonia for a few days, and holds at least one meeting with each of his students (official and non-official) and he is always available for a chat. Miguel has also come to Estonia on purpose to support and help me during my first fieldwork campaign. I felt extremely stressed because it was the first time I organized my own experiment but he was very calm and pragmatic the whole time.

Miguel is approachable, and I believe we have a very honest student-supervisor relationship. I was provided with several ideas for my research, but I also was given freedom to go ahead with my own ideas. Miguel lets me choose how much of his involvement I want or need in each phase of my research. He answers quick to my emails and always gives feedback in a kind way. Besides being an excellent supervisor, I truly believe Miguel is an amazing researcher. I am frequently amazed by his thought process and his knowledge. I was fortunate enough to attend a couple of his lectures and it was clear to me that he is as impressive at teaching in a classroom as I already knew him to be in the field.

However, that is not all. Miguel is a great human being. From day one I felt comfortable and seen as a human and a researcher, not as an inferior. I was very open about feeling worried about my mental health during the Ph.D. as I knew so many of my friends have struggled a lot. I was reassured that I would be supported if it ever came to that. And it has. I do not feel pressure from neither of my supervisors, but I put too much pressure on myself and that has triggered higher levels of anxiety. I have been understood, I was given some space and time to slow down, and their priority has always been my health.

Miguel is also a fun person to be around, who takes things seriously but in a light-hearted way. He is relatable, hardworking, intelligent and unpretentious. I know this sounds too good to be true or you might think I am only saying all these things because he is my supervisor. However, this is my experience and I feel privileged to have him guide me in this Ph.D. journey. Any student would be fortunate to have Miguel as a supervisor or professor, and any university would be lucky to have Miguel in their academic staff. I wish him nothing but the best.

Kind regards,

Mariana Rodrigues Morgado

Assinado por: **Mariana Rodrigues Morgado**
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