

Yuri Gelsleichter

Nationality: Luxembourgish, Brazilian **Date of birth:** 26/06/2023 **Gender:** Male

✉ **Email address:** yurigelsleichter@gmail.com

📍 **Other:** Fácán sor, 2100 Gödöllő (Hungary)

ABOUT ME

Accomplished researcher and educator specializing in Geomatics and coding, with a strong foundation in Digital Soil Mapping, Proximal Soil Sensing, and Data Visualization. Holds a Ph.D. in Science, Technology, and Innovation in Agriculture. Demonstrated proficiency in R programming, machine learning techniques, and data analytics. Experienced in international collaborations and committed to advancing computational reproducibility and Open Science principles.

EDUCATION AND TRAINING

Ph.D. Science Technology and Innovation in Agriculture

Federal Rural University of Rio De Janeiro - UFRRJ [03/2016 – 03/2020]

City: Seropédica

Country: Brazil

Website: <http://ufrj.br/>

Field(s) of study: Graduate Program in Science Technology and Innovation in Agriculture

Soil classification, mapping and spectral characterization; and R programming

B.Sc. Environmental and Sanitary Engineering

University of Southern Santa Catarina - UNISUL [08/2009 – 08/2015]

City: Palhoça

Country: Brazil

Website: <https://www.unisul.br/>

WORK EXPERIENCE

Higher education research assistant

Hungarian University of Agriculture and Life Sciences - MATE [02/2021 – Current]

City: Gödöllő

Country: Hungary

Researching soil classification, mapping and spectral characterization

Classes on R programming, soil amelioration and protection

Data scientist

Just [08/2020 – 01/2021]

City: Just.bi

Country: Brazil

- Design sampling data
- Implementation of Machine Learning models
- Development of Recency, Frequency, Value

PUBLICATIONS

Enhancing Soil Mapping with Hyperspectral Subsurface Images generated from soil lab Vis-SWIR spectra tested in southern Brazil

[2023]

Gelsleichter, Y.A.; Costa, E.M.; Anjos, L.H.C.; Marcondes, R.A.T

Development of Hyperspectral Soil Mapping, integrating lab-based Vis-SWIR spectra with Digital Soil Mapping to improve soil property predictions. Random Forest algorithm with k-fold cross-validation, achieving improved prediction accuracy for Total Carbon content in soils. Applicable in various settings including agriculture and conservation.

Past and Future Responses of Soil Water to Climate Change in Tropical and Subtropical Rainforest Systems in South America

[2023]

Arévalo, S.M.M. et al.

Assessed impacts of land use and climate change on South America's tropical longleaf forests using ARIMA models for soil moisture and future climate scenarios. Identified regional trends and vulnerabilities, focusing on case studies from the Brazilian states of Acre and Rio de Janeiro. Findings contribute to targeted forest preservation strategies.

Degradation of South American biomes: What to expect for the future?

[2022]

Delgado, R.C.; Santana, R.O.; Gelsleichter, Y.A.; Pereira, M.G.;

Analyzed 18 years of meteorological, biophysical, and fire variables to study vegetation dynamics across South American biomes, forecasting trends until 2040. Predicted increased air temperatures, especially in tropical regions, will intensify evaporation, transpiration, and likelihood of mega-fires. Findings, based on ARIMA and CanESM5 models, signals to prevent biodiversity loss and human casualties.

Mapping soil properties in a poorly-accessible area

[2020]

Costa, E.M.; Pinheiro, H.S.K.; Anjos, L.H.C; Marcondes, R.A.T.; Gelsleichter, Y.A.;

Conducted soil mapping in the remote Itatiaia National Park (INP) focusing on soil properties like pH, carbon content, and CEC using Digital Soil Mapping (DSM) tools. Utilized conditioned Latin Hypercube Sampling (cLHS) for designing sampling strategy and compared linear (MLR) and nonlinear (GAM) models for calibration. Produced 2- and 3-D soil maps revealing GAM with covariates based on soil formation factors as most effective, particularly in areas with limited access and sampling density.

Spatial Bayesian belief networks: a participatory approach for mapping environmental vulnerability at the Itatiaia National Park, Brazil

[2020]

Costa, E.M.; Pinheiro, H.S.K.; Anjos, L.H.C; Gelsleichter, Y.A.; Marcondes, R.A.T.;

Implemented a Bayesian Belief Network (BBN) to assess environmental vulnerability in Itatiaia National Park (INP) using diverse data like soils, land use, climate, and relief. The model identified areas of fragility based on several environmental factors, such as soil organic carbon content, cation exchange capacity, and fire susceptibility. The BBN model not only offered an objective approach but also facilitated the propagation of prediction uncertainty, providing actionable insights for park management and conservation efforts.

DIGITAL SKILLS

Digital Soil Mapping / Hyperspectral Soil Mapping / R Programming / Geographical Informational Systems (GIS) / Soil Spectroscopy / Machine Learning: Python, R / Remote Sensing / Soil classification

TECH TOOLS

Tools for automatization and Geomatic

R programming language

Linux OS

Git

LaTeX

Python

SQL

Bash

GIS softwares

QGIS

SAGA

GRASS

GDAL

DATA SCIENCE

Applied tools for data analyse

Soil Spectral Analysis, prediction of soil properties with machine learning

ETL tools (extract, transform, and load data)

Data management

Data visualization

Multivariate analyses

ACADEMIC EXPERIENCE

Soil Mapping

[10/2022 – Current]

Mapping soil properties with undergraduate students with R programming language; 3 hours

Soil conservation and amelioration

[08/2022 – Current]

Soil physical properties, diagnostics and prevention; 3 hours

Introduction to the R program

[02/2022 – Current]

Course ministered at <https://en.uni-mate.hu/> for graduate level at Magyar Agrár- és Élettudományi Egyetem - Neptun CODE KORTU263N; 25 hours

(online) Data analysis and visualization in R environment applied to Agronomy and Soil Sciences

[10/2020]

Course ministered at Federal Rural University of Rio de Janeiro <http://ufrj.br/> for Graduate level, course page: <https://oficinador.com.br/> (Portuguese Language); 60 hours

Data analysis and visualization in R environment applied to Agronomy and Soil Sciences

[06/2019]

Course ministered at Federal Rural University of Rio de Janeiro <http://ufrj.br/> for Graduate level, course page: <https://sites.google.com/view/gelsleichter/> (Portuguese Language); 60 hours

Metrology instruments and precision measurements

[04/2013 – 06/2013]

Secondary education and technical level, at National Service for Industrial Apprenticeship; 100 hours

VOLUNTEERING

22nd World Congress of Soil Science in Scotland

[08/2022]

Assistance during the event

4th International Soil Judging Contest - Stirling, Scotland

[08/2022]

Collaborating over the organization, site and profiles preparation, and development of the event

Wageningen Soil Conference

[08/2019]

Coordination of tasks and people

21st World Congress of Soil Science in Rio de Janeiro

[08/2018]

Collaborating with the organization committee, assistance during the event

3rd International Soil Judging Contest - Seropédica, Rio de Janeiro

[08/2018]

Collaborating over the organization, site and profiles preparation, and development of the event

INTERNATIONAL EXPERIENCE

ISRIC - Exchange as Guest Research

[01/2019 – 08/2019]

Development of land cover changes scenario, Mapping large areas such as Argentina, <https://www.isric.org/>

Szent István University - MATE

[09/2017 – 06/2018]

Contribution for the Universal Soil Classification System by the creation of taxa centroids to compare WRB and Brazilian Soil classification system from the Stipendium Hungaricum Program

Szent István University - MATE

[06/2013 – 08/2014]

Undergraduate exchange focusing in genesis and soil classification

CONFERENCES AND SEMINARS

Spectroscopy supported definition, classification and interpretation of differences of sandy soils in Hungary

[Global Conference on Sandy Soils - Wisconsin, US, 06/2023]

Evaluation of centroid units from Brazil to Universal Soil Classification System

[22nd World Congress of Soil Science - Glasgow, 08/2022]

Test of an automated Soil Classification with Machine Learning application over Brazilian Soil Classification System and database

[International Soil Classification Congress - Querétaro, Mexico, 03/2022]

Hyperspectral images in the support of Digital Soil Mapping: Mountain study case

[Wageningen Soil Conference - Netherlands, 08/2019]

Evaluation and correlation studies of centroids of taxa from the Brazilian Soil Classification System

[21st World Congress of Soil Science - Rio de Janeiro, 08/2019]

Prediction of Soil Organic Carbon using Artificial Neural Network with Vis-NIR spectra in highlands of Itatiaia National Park, Rio de Janeiro

[21st World Congress of Soil Science - Rio de Janeiro, 08/2018]