

Alber Hamersson Sánchez Ipia

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Research interest

I am interested in Earth System Science, particularly Land Cover and Land Use Change. I specialize in Spatial Data Infrastructures and the analysis of large amounts of Earth Observation data using Machine Learning.

Education

- 2015 – 2020 Ph.D. in Earth System Science. National Institute for Space Research of Brazil. Project title: Detection of deforestation using remote sensing time-series analysis in the Brazilian Amazônia. Available at <http://tinyurl.com/ka5ajp8h>
- 2011 – 2013 Master of Science in Geoinformatics. Institute for Geoinformatics. Westfälische Wilhelms-Universität Münster. Germany. Project title: A Linked-Open-Data based georeferencing tool for historic maps. Available at <http://tinyurl.com/cmvmekv>
- 2010 - 2011 Project Development and Management. Escuela Colombiana de Ingeniería Julio Garavito. Bogotá, Colombia.
- 2004 - 2007 Master Degree in Information and Communication Sciences with Emphasis on Information Systems. Bogotá, Colombia. Project title: Data mining and knowledge discovery on imagery using web grid services (translated from Spanish).
- 1996 – 2001 Bachelor's Degree in Surveying Engineering. Universidad Distrital Francisco José de Caldas. Bogotá, Colombia. Project title: Model for the analysis of behavior and distribution of pollutant gases on Bogota (translated from Spanish).

Experience

- 2023 - Research Assistant at the Tropical Ecosystems and Environmental Science Lab (<https://www.treeslab.org/>) at the National Institute for Space Research in Brazil. My work involves monitoring the Brazilian Biomes using Earth Observation data, and building new analysis capabilities by processing data and developing tools in the area of Information and Communication Technology.
- 2020 – 2022 Associate Researcher in the Brazil Data Cube project at the National Institute for Space Research in Brazil. I am in charge of developing models of Land Cover and Land Use Change in the Amazônia, Cerrado and Pantanal biomes using Machine Learning and Big Earth

Observation data. Web page <http://brazildatacube.org/>

- 2014 – 2015 Research assistant in the Big Data Lab for Interdisciplinary Spatially-enabled Science at the University of Münster, Germany. I was in charge of extraction, transformation, and load of large amounts of satellite imagery to databases (SciDB) and to assist researchers and PhD students to run their Big Data experiments. Web page <http://tinyurl.com/zadu294u>
- 2012 – 2013 Internship (External semester) at 52°North – Applied GeoInformatics Research. I was part of the development team of client-side software for the Sensor Observation Service and Web Processing Services. Web page <http://tinyurl.com/3wyf22vn>

Computer skills

R environment for statistical computing and graphics. I am a contributor of the project Brazil Data Cubes (Analysis Ready Data for Land Use and Land Cover monitoring of the Brazilian Biomes <https://github.com/brazil-data-cube>) and the R packages SITS (Satellite Image Time Series Analysis for Earth Observation Data Cubes <https://github.com/e-sensing/sits/>), and cqmaTools (Air Mass Back-trajectories and Greenhouse Gas analysis over the Brazilian Amazon <https://github.com/INPE-LAGEE/cqmaTools>). I am also the author of the R package *RoughSetKnowledgeReduction* (<https://tinyurl.com/3pcp47s>). Besides, I am a proficient user of the Data Science and Machine Learning packages (TidyVerse and TidyModels).

Python. I have a working knowledge of Scientific libraries for Data Analysis (NumPy, SciPy, GDAL) and Jupyter Notebooks. Associated paper: *Reproducible geospatial data science: Exploratory DataAnalysis using collaborative analysis environments*. Revista Brasileira de Cartografia, v. 70, n. 5, p. 1844–1859, 2018. Code available at <https://github.com/e-sensing/wgiss-py-webinar>

JavaScript. Development of applications using web technologies such as XML, RFD, Leaflet, and Linked Open Data. Associated paper *Encoding and Querying Historic Map Content*. Code available at <https://github.com/ifgi/georeferencer>

Spatial databases. I am a user of databases for hosting Geographic information including Oracle, MySQL, and PostgreSQL in the context of ArcGIS Server (ArcSDE) and GeoServer.

Linux. I am an experienced user of the Command Line Interface of Debian-based distributions. I am familiar with tools for handling spatial data (gdal, ogr2ogr, proj), remote datasets (scp, sshfs, wget, rsync, ftp, curl), and processing large amounts of remote sensing imagery (GNU Parallel).

Containerization. I write my own docker files and I am a user of Rocker (Docker containers for the R language). I am used to Agile development, DevOps, and deploying microservices using OpenCPU and OSGeo Actinia.

Links

Publication lists:

- Google Scholar: <http://tinyurl.com/6d7a32rk>
- Zotero: <https://www.zotero.org/albhasan>

Software projects <https://github.com/albhasan>

Awards and achievements

- Best Full Paper Award granted by the Association of Geographic Information Laboratories in Europe – AGILE Conference 2014.
- First place on the NASA World Wind Europa Challenge 2013 with the project Europa Linked Observation Browser.
- Student of the year 2013. Granted by Institute for GeoInformatics and the ESRI Development Center.
- Second place in the German Summer of Science of 2012 with the project Sustainability Triangle.

Certifications

2008 Information Technology Infrastructure Library (ITIL) Foundations V3.

2008 Certified Project Manager Professional (standards ANSI/PMI 99-001-2008 and IEEE 1490-2011) by the the Project Management Institute.

Languages

SPANISH. Native tongue.

ENGLISH. Good reading, writing, speaking and listening skills.

PORTUGUESE. Good reading, writing, speaking and listening skills.

GERMAN. Basic level.