

## Joana M. SIMOES

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**Nationality:**

Portuguese

**Websites:**

Blog: <https://doublebyte.net/>

Linkedin Profile: <https://www.linkedin.com/in/joanasimoes/>

StackOverflow Profile: <https://stackoverflow.com/users/1119445/doublebyte>

Github: [https://github.com/doublebyte1/\(code repository\)](https://github.com/doublebyte1/(code repository))

OSGeo: <https://wiki.osgeo.org/wiki/Doublebyte>

**Main Interests**

Geographic Information Systems, Big Data, Data Mining, Micro-services, Cloud, Standards,  
Free and Open Source Software.

**Education**

Ph.D. in Geography/Geographic Information Systems, January 2007

CASA-UCL, London, UK

*An Agent-Based Approach to Spatial Epidemics through GIS*

MSc in Civil Engineering (Hydraulics and Water Resources), May 2002

IST, Lisbon, Portugal *Distributed Flood Modelling, using Raster Support*

Undergraduate in Geography and Regional Planning (Physical Geography), July 1996

FLUL, Lisbon, Portugal

Extra Curricular Subjects: Introduction to Meteorology, Marine Hydraulics, Neural Networks.

**Affiliation**

- Honorary researcher at the Bartlett Centre for Advanced Spatial Analysis (CASA) (from 2007).  
<http://www.bartlett.ucl.ac.uk/casa>
- Invited researcher at the Centre of Geographical Studies of the University of Lisbon.  
<http://www.ceg.ul.pt/index.asp?lang=en>

## Participation in Organizations and Professional Bodies

- Board director of the Industry Advisory Council (IAC) of the Global Spatial Data Infrastructure Association (GSDI).  
<http://www.gsdiassociation.org/index.php>
- Vice-president of the Portuguese chapter of the Open Source Geospatial Foundation (OsGeo).  
<https://www.osgeopt.pt>
- OSGeo Charter Member.  
<http://www.osgeo.org/>
- Member of ACCU: Association of C and C++ Users.  
<http://accu.org>

## Awards

- J. Simoes, C. Skelly and J. Simoes. *Iesim: Simulating And Understanding Real World Events In A Game-Like Environment*. Award for the best Paper, given in WAMS 2010, Workshop on Applied Modeling and Simulation, Buzios, Rio de Janeiro, Brazil, 5<sup>th</sup>-7<sup>th</sup> May 2010.
- C. Pinto, J. Simoes and M. Afonso-Dias. Award for the best Poster/PC Demo presentation given to GeoCrust software demonstration in the Third International Symposium on GIS Spatial Analyses in Fishery and Aquatic Sciences, Xangai, China, August, 2005. <http://www.esl.co.jp/Sympo/3rd/>

## Employment

GeoCat Nederlands/Spain  
Senior Software Engineer 2016-2018

Design, implementation and maintenance of the GeoCat Live docker based platform, for running Spatial Data Infrastructures on the cloud. Extension/customization of the Geonetwork OpenSource catalog, and other server side Java software. Clients include Tufts University (USA), COBWEB (European project), JRC (European Commission) and Eurostat (European Commission).

<http://http://geocat.net/>

Eurecat Catalunya, Spain  
Technological Center of Catalunya  
Senior Data Scientist (Big Data) 2014-2016

Key participation in the creation of the Big Data Centre of Excellence (BIGDATACoE), as lead data scientist and geospatial engineer, projecting and implementing use cases regarding the topic of smart cities (traffic and social media). Clients included INDRA and RACC.

Major Tasks:

- Description of citizen mobility modelling, which was based on a sophisticated analysis of large-scale, ubiquitous data acquired by the Ciudad2020 structure and associated with urban human behaviour.
- Definition of use cases, regarding urban traffic and road accidents.
- Implementation of predictive analytics to forecast traffic intensity, as a result of context variables.

- Design and implementation of a data mining workflow, using a scalable infra-structure within Amazon Web Services (AWS).
- Geospatial analysis of road accidents and related variables.
- Creating visualizations using a scalable and real-time enabled framework.

**Other Accomplishments:**

- Support to other projects, regarding the use of spatial technologies.
- Writing deliverables for projects, both in Spanish and English.
- Participation in the elaboration and writing of both private, sector and European proposals, in Spanish and English.
- Improvement and optimization of previously developed algorithms.
- Model prototyping and implementation using a variety of languages (R, Java, Hive).
- Research regarding scalable solutions for geospatial analysis (Hadoop GIS).
- Story-telling and production of insights, based on data mining-machine learning results.
- Designing and delivering workshops focused on technical aspects of Big Data and spatial analytics.

This work is supervised by Prof. Dr. Marc Torrent.

<http://http://eurecat.org/>

FAO

Spain, Norway, Italy

Food and Agriculture Organization, UN

GIS Software Design and Development

2013-2014

Consultant

This assignment included the further development of the Catch Assessment Survey System (FaoCAS), providing support to the NANGIS project and other punctual tasks.

**Major Tasks:**

- Reviewing different aspects of freely available Relational Database Management Systems (RDBMS), including support for asynchronous, multi-master, data replication.
- Migration of the Catch Assessment Survey database, from MS SQL Server to PostgreSQL. As a consequence the system will be cross-platform, and completely based on Free and Open Source software (FOSS).
- Reengineering the software, in order to interact with the new database.
- Analysis of the existing NANSIS system, and participation on the design of a new spatially enabled system (NANGIS), normalized and enforcing a strict model about the data.
- Supporting the NANGIS project by developing support tools, that replace time-consuming, error-prone manual processes with efficient, automated solutions.

**Other Accomplishments:**

- Analysis, testing, and refactoring of the FaoCAS code, in order to improve quality and functionality.

- Improved deployment, by creating and maintaining Windows and Linux versions of the software, with static and dynamic linking.
- Supporting the NANSIS/NANGIS project by providing expert input on database and QGIS plugins development.
- Installed, developed and maintained a project management system, that includes issue/bug tracking, wiki page and numerous charts/documents, supporting an AGILE development.
- Developed a Python plugin, in order to "showcase" the potentialities of QGIS, for EAF managers with a limited knowledge of GIS.
- Created and maintained repositories for code/database on Github.

This work is supervised by Prof. Dr. Pedro Barros.

<http://www.fao.org/>

FAO

Multiple Locations

Food and Agriculture Organization, UN

GIS Training Consultant

2012-2013

This assignment focused on the development of GIS training materials, to ease the implementation of the Ecosystems Approach to Fisheries (EAF) management process.

**Accomplishments:**

- Interacted with technical staff from FAO, in order to assess and analyse the technical requirements of the GIS tools.
- Reengineered the existing FAO material on GIS training, prioritizing the use of Free and open Source tools over proprietary software, and cross-platform solutions, over platform specific ones.
- Whenever needed, developed a new set of training materials on the practical execution of EAF Management Planning and Monitoring process, using GIS tools.
- Developed and implemented tools and plugins, in order to automate and ease EAF tasks, in a GIS environment.
- Supported the planning and execution of training workshops on EAF management Planning using GIS tools.
- Installed a wiki server, and developed and maintained a public wiki page with the produced material.
- Compiled and developed a sample spatial dataset, and created and maintained data repositories to store this data.

This work was supervised by Prof. Dr. Pedro Barros and Fabio Carocci.

<http://www.fao.org/>

FAO

Rome, Italy and Barcelona, Spain

Food and Agriculture Organization, UN

GIS Software Design and Development

2011-2012

Consultant

This consultancy focused on the use of GIS technologies, in fisheries data management

systems.

**Accomplishments:**

- Produced an extensive review of existing fisheries Data Management Systems, with an emphasis on technology, and particularly on GIS.
- Produced a small database and a wiki page, with the results of the review.
- Suggested ways of adequately incorporating GIS capabilities in the existing fisheries software systems.
- Further developed the software package for the storage, management and processing of fisheries Census, Sampling and Logbook data, based on different existing systems (like ArtFish, PescArte, those developed under the MedFisis project and others).

This work was supervised by Prof. Dr. Pedro Barros.

<http://www.fao.org/>

FAO

Rome, Italy

Food and Agriculture Organization

Software Design and Development

2010-2011

Consultant

This work consisted in redesigning and reimplementing a database and software for the storage, management and processing of fisheries Catch Assessment Survey data. Although this system was developed for helping the Mediterranean countries to manage their fisheries, it is abstract enough in terms of its architecture and implementation, to be easily extended to other countries.

**Accomplishments:**

- Led solutions reengineering that involved process abstraction and functionality enhancement. Replaced, non-scalable, error-prone database design with an elegant, efficient solution. The generic design allowed to store in a single database, data from both, logbook and sampling sources.
- Improved the maintainability of the system, by exposing the business logic to user customization.
- Served as a core group member in defining and prioritizing technology. The Adoption of Free and Open Source libraries in this system, is due to increase its ownership by the recipient countries, independently from their economical capacity.
- Developed a front end in C++, with an abstract database access layer that can potentially connect to multiple Database Management Systems, but that by specification interfaced with a database developed on MS SQL Server.
- Wrote technical documentation using automated tools (Doxygen).

This work was supervised by Prof. Dr. Pedro Barros.

<http://www.fao.org/>

CADCORP

London, UK

Computer Aided Corporation

Senior Software Engineer

2008-2010

Cadcort is a world leader in OGC compliant GIS software, that comprehends a whole range

of GIS products (web GIS, GIS for mobile devices, etc).

**Accomplishments:**

- Reengineered the core Cadcorp software and plugins, in order to extend/upgrade functionality. This involved mostly C++ programming, with the use of MFC, STL and COM objects.
- Coded new solutions within the Geognosis Web server, including early implementations of OGC specifications (WMTS, TMS) and preview of a variety of Web Mapping services. The Geognosis server is written in C# and the web services previews were developed with JavaScript(OpenLayers) and Java.
- Exposure to a wide range of specifications, formats and protocols.
- Participated in the testing and bug fixing of different parts of the system.

This work was supervised by Martin Daly.

<http://www.cadcorp.com/>

University of Brunel

London, UK

IeSim

Lead Software Developer

2006-2008

Iesim: This project focused on the developing of ieSim ADL - a unique spatial simulation modelling environment that allows for the development of professional dynamic modelling applications. It also included the development of outbreakP2P - a public health simulation model built with the ieSim ADL. outbreakP2P currently provides users with the ability to simulate pharmaceutical (vaccine, prophylactic and treatment) interventions in a community wide person - person outbreak.

**Accomplishments:**

- Led the conception and implementation of a portable, thread-safe and high performance modelling platform. The software was implemented in C++, using the Qt API.
- Designed and coded a "disease modelling" plugin, in order to demonstrate the capabilities of the library.
- Coordinated the development of a chart library by a third party contractor, and later integrated it into the software.
- Reengineered and completed the development of a GIS library.
- Delivered technical documentation for the libraries and plugins, using automated tools (Doxygen).
- Collaborated in the content of the project's website.

This work was supervised by Prof. Dr. Chris Skelly.

<http://tinyurl.com/cob8uhn>

University of ALGARVE

Faro, Portugal

FCMA

Consultant (GIS)

2004-2007

GeoPescas: This project extended the methodology previously developed on GeoCrust(2002), to the ground fish trawl feet. It delivered spatial/temporal analyzes of the fishing effort and landings per unite effort, by species and by fishing grounds, improving knowledge of the

fishing effects on the target stocks.

**Accomplishments:**

- Led the development of the spatially "awareness" of the software solutions.
- Coded new algorithms for manipulating and displaying spatial information (Java, Visual Basic).
- Analysed the outputs of the project, from a GIS point of view.

This work was supervised by Prof. Dr. Manuel Afonso-Dias.

<http://w3.ualg.pt/~madias/GeoPesca/>

University of ALGARVE

Faro, Portugal

FCMA

Scientist (GIS, databases, programming)

2000-2002

GeoCrust: This project used GIS and VMS technology, to monitor vessels dynamics and evaluate the behavior of some fishery resources.

**Accomplishments:**

- Led, architected and participated in the design, testing and deployment of a GIS standalone application. This application was developed in Visual Basic, using ESRI MapObjects for displaying and manipulating the geographical information.
- Participated in the design and implementation of a database, to accommodate the project data.
- Trained and mentored students in GIS methodologies and best practices.
- Promoted the visibility of the project, by participating in presentations/seminars and by supporting the elaboration of reports.

This work was supervised by Prof. Dr. Manuel Afonso-Dias.

<http://w3.ualg.pt/~madias/geocrust/>

IPIMAR - Research Institute for Fisheries  
and Sea

Lisbon, Portugal

Developer (GIS, programming)

1999/2000

FAIR: This project focused on the developing of GIS tools for marine and fisheries resources.

**Accomplishments:**

- Developed and implemented a GIS for Cephalopodes, using ESRI's Arcview;
- Improved the "user friendliness" of the system, through the development of a User Interface (UI) extension, in Avenue.
- Led solutions that involved process automation, regarding mapping and index generation.
- Served as a core group member in defining and prioritizing technology, and presenting the achieved results in relevant meetings.

This work was supervised by Dr Joao Pereira.

<http://www.abdn.ac.uk/eurosquid/faircd/ipigis.htm>

COBA - Engineering and Environmental  
Consultants

Lisbon, Portugal

GIS Analyst 1999  
The main tasks included analysing Aerial imagery, and counting and evaluating olive properties with the aid of GIS software.  
<http://www.coba.pt/grupo.asp>

INAG - Water Institute Lisbon, Portugal  
Research Assistant 1996/1997  
The MSc project in Hydraulics and Water Resources was integrated on the research project: *Conception and implementation of a warning flood system in real time, in Tranco Water-shed*.  
This work was supervised by Prof. Dr. Joao Reis Hipolito.  
<http://www.civil.ist.utl.pt/~jh/ficha4.html>

CEG - Center for Geographical Studies Lisbon, Portugal  
Research Assistant 1995/1996  
MAREN: Evaluation methodologies of the National Ecological Areas (REN).  
Accomplishments:

- Acquisition and quality control of the project data, using GIS;
- Developed and implemented a database application in Visual Basic, for storing data from interviews and generating reports.

This work was supervised by Prof. Dr. Ana Ramos Pereira.  
<http://www.ceg.ul.pt/areas/maren.html>

## Skills

- Languages: Portuguese (native), full proficiency in English and Spanish, good knowledge of Italian. Good understanding of French and Catalan.
- Data Mining: experience of data ingestion and pre-processing using a combination of tools (e.g.: Hive, Pig, jq, sed, curl). Experience in data analysis and fast prototyping using R, and distributed machine learning libraries (e.g.: H2o). Experience designing and producing dashboards for story-telling, using the ELK stack (ElasticSearch-Logstash-Kibana)
- Cloud Infra structure: experience designing and implementing scalable workflows in the Amazon Web Services infra structure (AWS). Experience on automated server provision, using docker-machine, on Digital Ocean and OpenStack.
- DevOps: hands on experience on the creation and deployment of apps in containers, using Docker.
- Languages/Programming: C/C++, Java, Python, C#, JavaScript, SQL, XML, JSON, BASH shell scripting, L<sup>A</sup>T<sub>E</sub>X, R.
- Geographical Information Systems (GIS): Extensive experience as user, developer and mentor/teacher/trainer. Working knowledge of GDAL/OGR, GEOS, QGIS/GRASS, ESRI ArcGIS and ESRI tools for Hadoop. Extensive knowledge of OGC standards and servicens; active user and developer in the Free and Open Source Geo Community. "Hands-on" experience designing and publishing maps on the cloud, using CartoDB.



- **Databases:** Experience of database design, management and development. Excellent knowledge of SQL, as well as SQL extensions (PL/pgSQL, T-SQL). Experience with the following RDBMS: PostgreSQL, MS SQL Server, SQLite, MySQL, Ms Access, Oracle. Deep knowledge of geometric types and operations using spatial vendor extensions (Spatialite, RasterLite, SQL Spatial, PostGIS, Hadoop GIS). "Hands-on" experience of NoSQL technologies and search engines (e.g.: MongoDB, Elasticsearch). Experience with distributed storage and processing of large amount of data (Big Data), using the Hadoop framework and the Hive interface.
- **Libraries/API's:** Excellent knowledge of the Qt/PyQt API and working knowledge of the .NET framework, MFC, STL, Boost and Java Spring.
- **Web Services:** "Hands-on" experience, installing and managing: web servers (Apache, Nginx), Wiki servers (Mediawiki), Cloud servers (Owncloud) and Project Management Systems (Redmine).
- **Versioning Systems:** Working experience of the following version control systems: Git, SVN and CVS; experience on installing and maintaining a CVS server; active user on Github and bitbucket.
- **Documentation:** Experience of writing user manuals and developing automated documentation (using Doxygen); experience in implementing an Help, using the Qt Help Framework.
- **AGILE:** "hands-on" experience on AGILE methodologies such as TDD, and extreme programming. Experience in the roles of SCRUM master, AGILE coach and AGILE developer.
- **Miscellaneous:** Proven track record as leader and project manager; experience driving system architecture decisions and lead projects from concept, through the release process. Experience writing proposals, including budgeting and scheduling, and then managing projects. Strong verbal and written communication skills, excellent analytical, trouble shooting and debugging skills.
- **Social:** Active blogger and Tweeter about programming, GIS and Big Data.

## Software

J. Simoes (GeoCat) **Geonetwork Official Docker image**. [https://hub.docker.com/\\_/geonetwork/](https://hub.docker.com/_/geonetwork/)

J. Simoes (BDigital) **Cluster Explorer**. Application to explore geo-located micro-blogging data (Tweets), using two different cluster algorithms: DBSCAN and OPTICS. This software was implemented in Java, using Nasa World Wind for the 3D geo visualizations.

J. Simoes (FAO) **FAO FishCAS**. Linux port of the FAO FishCAS, using PostgreSQL as database.

J. Simoes (FAO) **GISForEAF**. QGIS Python Plugin that provides a robust framework to collate, manage and disseminate spatial information in support of EAF process. This project is hosted on gitHub: <https://github.com/doublebyte1/eaf>

J. Simoes (FAO) **DiagLeg**. QGIS Python plugin to create a legend, for diagrams generated through the "Overlay" tab of the layer properties. Submitted and accepted on the public plugin repository at: <http://plugins.qgis.org/plugins/DiagLeg/>. Project page at: [https://ladybug.no-ip.org/mediawiki/index.php/Pie\\_Chart\\_Legend](https://ladybug.no-ip.org/mediawiki/index.php/Pie_Chart_Legend)

J. Simoes (FAO) **FAO FishCAS**. Package for collecting, storing and managing fisheries census data for both logbook and Sampling systems. This package includes a database in SQL Server and a client application written in C++ using the QT API. It was based solely in free and open source libraries.

J. Simoes. R. Estanqueiro. **libTestIndexes**. C++ library for computing a range of shape indexes, for studying the morphometry of cities. A number of geometry algorithms (sometimes iterative) were developed, to compute properties such as: the maximum enclosed circle, minimum enclosing circle or radials. The library was built on top of GDAL and Geos Spatial Libraries. This library was developed and deployed in Linux.

J. Simoes. and C. Skelly. **outbreakP2P**. Public health simulation model built with the ieSim ADE. outbreakP2P currently provides users with the ability to simulate pharmaceutical (vaccine, prophylactic and treatment) interventions in a community wide person - person outbreak.

J. Simoes. and C. Skelly. **Iesim ADL**. Spatial simulation modelling environment that allows for the development of dynamic professional modelling applications. This software was developed in C++ in both, Windows and Linux platforms and was supported by the development of a GIS library.

J. Simoes. **SPEMOD**. Software written in C++ that implements an agent-based model for modelling spatially an epidemic outbreak. All GIS algorithms were implemented natively.

J. Simoes and C. Pinto, M. Afonso-Dias. **GEOCRUST**. *GIS-like* software, to estimate and map fishing effort and catch rates for the Portuguese crustacean trawl fleet. It was programmed in Visual Basic, with ESRI MapObjects.

J. Simoes, J. Reis Hipolito. **MODCHEIAS**. Distributed flood model, developed in Visual Basic, with ESRI MapObjects.

J. Simoes. **IPIMAR Cephalopod GIS**. Arcview based GIS, developed in Avenue. It allows the automatic generation of maps and indexes, concerning marine and fisheries resources.

J. Simoes. **MAREN**. *Database-like* program, designed to insert data from the interviews collected during this project and generate reports. The software was programmed in Visual Basic.

## Working Papers

M. Arias de Reyna, J. Simoes. *Empowering citizen science through free and open source GIS in Open Geospatial Data, Software and Standards 1:7*, Springer Open, June 2016. Available at <https://opengeospatialdata.springeropen.com/articles/10.1186/s40965-016-0008-x>

J. Simoes, R. Gimenez, M. Planaguma. *Big Data and Spatial Databases: a Comparative Analysis* in 9as Jornadas de SIG Libre, Girona, 2015. Available at [http://www.sigte.udg.edu/jornadassiglibre/wp-content/uploads/2014/09/JSLart\\_benchmarking\\_BDIGITAL.pdf](http://www.sigte.udg.edu/jornadassiglibre/wp-content/uploads/2014/09/JSLart_benchmarking_BDIGITAL.pdf)

J. Simoes. *Help!* in {cvu} magazine, Volume 25 Issue 1, March 2013. Available at <http://accu.org/var/uploads/journals/CVu251.pdf>

J. Simoes. *Some Thoughts on Writing a Scientific Application* in {cvu} magazine, Volume 24 Issue 2, May 2012. Available at <http://accu.org/var/uploads/journals/cvu242.pdf>

J. Simoes. *Simulating Vaccination Strategies* in Proceedings of the 14<sup>th</sup> European Colloquium on Theoretical and Quantitative Geography, 2005.

J. Simoes. *A Complex Systems Approach to Spatial Epidemics* in Proceedings of SMOCS - Conference on Stochastic Modelling of Complex Systems, 2005.

J. Simoes. *Modelling the Spreading of Infectious Diseases using Mobility Networks* in Proceedings of CUPUM - the Ninth International Conference on Computers in Urban Planning and Urban Management, 2005.

J. Simoes. *Spatial Epidemic Modelling in Social Networks* in AIP ( American Institute of Physics) CNET2004 Conference Proceedings 776, ISBN: 0-7354-0262-0, 2005.

J. Simoes, C. Pinto, M. Afonso-Dias. *Methodology for Monitoring and Management of the Crustacean Trawl Fleet. Example of GeoCrust 1.0 GIS* in Finisterra special edition Cartography and Geographic Information Systems, 2005.

M. Afonso-Dias, J. Simoes and C. Pinto *A dedicated GIS to estimate and map fishing effort and landings for the Portuguese crustacean trawl fleet.* GIS/Spatial Analyses in Fishery and Aquatic Sciences (Vol. 2). Fishery-Aquatic GIS Research Group, Saitama, Japan, 2004.

J. Simoes. *Agent Based Modeling: Application to Spatial Epidemiology* in Proceedings of the 33<sup>rd</sup> Annual Conference of the Regional Science International Association, 2003.

J. Simoes, J. Reis Hipolito. *Modcheias, a Hidrological Model for the Definition of Flooded Areas* in Proceedings of the II Congresso Iberico sobre Gestao y Planificacion del Agua, 2002.

J. Simoes. *Flood distributed Modeling using Raster Support* in Proceedings of Sistemas Informaticos na Gestao de Recursos Territoriais e Naturais, 1998.

## Books

J. Simoes. *Simulating Spatial Epidemics Modelled through Agents and Networks: A GIS Approach* 172 p. ISBN-10: 3843351848. ISBN-13: 978-3843351843. LAP Lambert Acad. Publ.(2010).

## Book Chapters

L. Subirats, J. Simoes, A. Steblin. Geographical Information Systems in Modern Citizen Science. in L. Ceccaroni, J. Piera (eds.). *Analyzing the Role of Citizen Science in Modern Research*. 355 p. ISBN: 9781522509622. Springer. (2016).

J. Simoes. Studying Spatial Epidemics through Agent-Based Modelling and GIS. in A. Heppenstall, A. Crooks & M. Batty (eds.). *Current Geographical Theories for Agent-Based Modelling: Moving from Theory to Real World Applications*. 385 p. ISBN: 978-90-481-8926-7. Springer. (2012).

## Invited Talks

J. Simoes. *Spatial Data Infrastructures: in the age of Docker and Microservices*, keynote speaker at the *FOSS4GUK*, organized by the OSGeo UK Local Chapter in London, 8 – 9<sup>th</sup> March, 2018. Available online: <https://gitpitch.com/doublebyte1/keynotes/master?p=foss4guk#/>

J. Simoes. *Horizontes no Panorama da Ciência de Dados Espaciais*, keynote speaker at the *SASIG2015*, organized by the portuguese chapter of the Open Source Geospatial Foundation in Lisbon, 25<sup>th</sup> September, 2015. Available online: <https://github.com/doublebyte1/sasig/blob/master/sasig.pdf>

J. Simoes. *A GEO-stack for Big Data: Driving Spatial Analysis Beyond the Limits of Traditional Storage*, invited speaker in the *Big Data, Geo-Analysis And Planning* panel, at the *I Conference On Advanced Spatial Modeling And Analysis*, organized by CEG-IGOT in Lisbon, 12<sup>th</sup> March, 2015. Available online: <https://www.youtube.com/watch?v=QsG0oWdqaT8&feature=youtu.be>

J. Simoes. *Desenvolvimento de Projectos com Tecnologias Espaciais. Algumas Reflexões*. Presentation at *Geocamp 2013*, in Obidos, Portugal, 25th May, 2013. Available online: <http://tinyurl.com/lmnx6rt>

J. Simoes. *Bases de Dados Espaciais/ SpatiaLite*. Workshop presented within the context of the working group *Modelação Geográfica, Cidades e Ordenamento do Território*, e-GEO (FCSH), in Lisbon, 21st February, 2013.

J. Simoes. *Combining CA, Neural Networks and GIS in a Coastal and Land Use Model*. Module of the course *Remote Sensing and GIS for Coastal Zone Management*, NOVA Coastal and Marine School 2010, in ICCM10 - International Conference on Coastal Conservation and Management in the Atlantic and Mediterranean, Estoril, Portugal, 15th April, 2010.

J. Simoes. *Spatial Epidemic Modelling: an Approach Based in Agents and GIS*. Seminar: "Complexity in Geography", integrated on the MSc in Geographical Information Systems and Territorial Modelling Applied to Regional Planning, FLUL, Lisbon, Portugal, 16th March, 2010.

J. Simoes. *Spatial Epidemic Modelling: an Application of GIS and Complexity Theory*. Seminar: "Complexity in Geography", integrated on the MSc in Geographical Information

Systems and Territorial Modelling Applied to Regional Planning, FLUL, Lisbon, Portugal, 15th December, 2007.

J. Simoes. *EpiSIM: Spatial Epidemic Modelling based in Agents and GIS*. First Conference of Health and Geographic Information Technologies, organized by e-GEO (FCSH-UNL) and GeoPoint, Lisbon, Portugal, June, 2007.

J. Simoes. *Capturing the Dynamics of Spatial Epidemics using a Agent Based Approach*. Alergic ( Artificial Life Reading Group), University of Sussex, Brighton, UK, February, 2005.

J. Simoes. *Agent Based Modelling*. Workshop Jornadas E-Geo 2004, FCSH, Lisbon, Portugal, October, 2004.

J. Simoes. *An artificial life approach to spatial epidemics*. Alergic ( Artificial Life Reading Group), University of Sussex, Brighton, UK, April, 2004.

J. Simoes. *Distributed Flood Modelling using Raster Support*. IV Jornadas de Geografia e Planeamento, University of Minho, November, 2002.

## **Presentations**

J. Simoes. P. Florance, C. Barnett, J. Garcia and A. Cerciello *The Data Ingest API: a simple way to push data into GeoServer*. Presentation at the FOSS4G Europe conference in Guimaraes, Portugal, 17<sup>th</sup> – 19<sup>th</sup> July, 2018.

J. Simoes. *Micro-services through Docker: Tales from a Journey*. Presentation at the Docker Meetup in Barcelona, Spain, 14<sup>th</sup> December, 2017.

J. Simoes. *Migração de Projetos SIG com a Extensão OWS GeoPackage*. Presentation at the SASIG 2017, Porto, Portugal, 20 – 22<sup>nd</sup> November, 2017.

J. Simoes. *Metadados Já!*. Presentation at the SASIG 2017, Porto, Portugal, 20 – 22<sup>nd</sup> November 2017.

J. Simoes. *GeoCat Live: Uma Solução INSPIRE-ready para a Publicação de Dados na Cloud*. Presentation at the IIIDE 2017, VIII Jornadas Ibéricas de Infraestruturas de Dados Espaciais, Lisbon, Portugal, 15 – 17<sup>th</sup> November, 2017.

J. Simoes, A. Tzotsos, T. Sutton. *Towards an Improved Metadata Management in QGIS - Vision and Roadmap*. Presentation at the FOSS4G world conference, Boston, USA, 14–19<sup>th</sup> August, 2017.

J. Simoes, P. Kalberer, P. van Genuchten. *Sharing and Migrating GIS Projects with OGC GeoPackage*. Presentation at the FOSS4G world conference, Boston, USA, 14–19<sup>th</sup> August, 2017.

J. Simoes, P. van Genuchten, J. Ticheler. *Taming Big Data with Metadata*. Presentation

at the GSDI 15 World Conference, Taiwan, 28<sup>th</sup> November - 2<sup>nd</sup> December, 2016.

J. Simoes, P. van Genuchten, M. Arias de Reyna and A. Bruy. *Catalog Support in QGIS: Current Status and Proposed Developments*. Presentation at the INSPIRE conference 2016, Barcelona, Spain, 26 – 30<sup>th</sup> September, 2016.

J. Simoes, J. Garcia, M. Arias de Reyna and F. Prunayre. *Scalability of GeoNetwork: Current Status and Future Directions*. Presentation at the FOSS4G world conference, Bonn, Germany, 24 – 26<sup>th</sup> August, 2016.

J. Simoes, A. Freire and P. van Genuchten. *Leveraging Big Geo Data through Metadata*. Presentation at the FOSS4G world conference, Bonn, Germany, 24 – 26<sup>th</sup> August, 2016.

J. Simoes. *Visualizing Geo-located Tweets: a Spatial Data Mining Approach*. Presentation at the 4<sup>th</sup> DataBeers Barcelona, Barcelona, Spain, 16<sup>th</sup> September 2015. Available online: [https://github.com/doublebyte1/data\\_beers/blob/master/data\\_beers.pdf](https://github.com/doublebyte1/data_beers/blob/master/data_beers.pdf)

J. Simoes. *Visualizing Micro-blogging data using Clustering and GIS*. Presentation at the Workshop: Data Visualization from different universes. Some applications from the scientific, artistic and business world, complexitat.cat, Barcelona, Spain, 11<sup>th</sup> May 2015. Available online: [https://github.com/doublebyte1/complex\\_cat/blob/master/complex\\_cat.pdf](https://github.com/doublebyte1/complex_cat/blob/master/complex_cat.pdf)

J. Simoes, R. Gimenez, M. Planaguma. *Big Data and Spatial Databases: a Comparative Analysis* in 9as Jornadas de SIG Libre, Girona, 2015. Available at <https://vimeo.com/133637828>

J. Simoes, C. Skelly and J. Simoes. *IESIM: Simulating communities with a game-like approach*. Pecha Kucha style presentation for the group Urban Beers, Barcelona, Spain, 23<sup>rd</sup> April 2013. Available online: <http://www.slideshare.net/urban-beers/iesim>

J. Simoes, C. Skelly and J. Simoes. *Iesim: Simulating And Understanding Real World Events In A Game-Like Environment*. WAMS 2010, Workshop on Applied Modeling and Simulation, Buzios, Rio de Janeiro, Brazil, 5-7 May 2010.

Joana Simoes, Jorge Rocha, José Carlos Ferreira, António José Tenedório & Paulo Morgado. *A Bottom Up Approach to the Modelling of Coastal and Land Use Evolution through GIS*. CoastGIS 2009, the 9th International Symposium on GIS and Computer Mapping for Coastal Management. Santa Catarina, Brazil, 30<sup>th</sup> September - 2nd October 2009.

C. Pinto, J. Simoes & M. Afonso-Dias. *GeoPescas - a website for the dissemination of georeferenced information from the Portuguese crustacean trawl fishery*. ICES C.M. 2006/N:20, 2006.

M. Afonso-Dias, C. PINTO & J. Simoes. *GeoCrust 2.0 - a computer application for monitoring the Portuguese Crustacean Trawl fishery using VMS, landings and logbooks data*. ICES C.M. 2006/N:19, 2006.

J. Simoes. *Modelling a Mumps Outbreak through Spatially Explicit Agents*. Potentials of Complexity Science for Business, Governments, and the Media 2006, Collegium Budapest, Hungary, August, 2006.

J. Simoes. *Modelling the Spreading of Infectious Diseases using Mobility Networks*. CUPUM 2005 - the Ninth International Conference on Computers in Urban Planning and Urban Management, UCL, London, UK, July, 2005.

J. Simoes. *A Complex Systems Approach to Spatial Epidemics*. SMOCS 2005 - Conference on Stochastic Modelling of Complex Systems, Queensland, Australia, July, 2005.

J. Simoes. *A Complexity Approach to Spatial Epidemics*. CASA third-year report seminar, CASA, London, UK, January, 2005.

J. Simoes. *Epidemic Modelling using vector format*. V Congresso da Geografia Portuguesa, University of Minho, Guimares, Portugal, October, 2004.

J. Simoes. *Epidemic Modelling on Social Mobility Networks*. CNET2004, Science of Complex Networks: from biology to the Internet and WWW, University of Aveiro, Aveiro, Portugal, August-September, 2004.

J. Simoes. *Using CA and GIS to model the Propagation of Infectious Diseases*. CASA upgrade MPhil/PhD seminar, CASA, London, UK, November, 2003.

J. Simoes. *Agent Based Modeling: Application to Spatial Epidemiology*. 33<sup>rd</sup> Annual Conference of the Regional Science International Association London, University of Saint Andrews, Scotland, UK, August, 2003.

J. Simoes. *Using GIS and CA to model the propagation of infectious diseases*. First-year progress presentation on CASA research colloquia, CASA, London, UK, March, 2003.

J. Simoes, J. Reis Hipolito. *Modcheias, a hydrological model for the definition of flooded areas*. II Congresso Iberico sobre Gestion y Planificacion del Agua, Sevilla, Spain, November, 2002.

J. Simoes, M. Afonso-Dias, C. Pinto. *A MapObjects application, using GPS data, for fisheries management*. 16<sup>th</sup> ESRI EMEA user conference, Lisbon, October, 2001.

M. Afonso-Dias, C. Pinto, J. Simoes. *Spatial Distribution of the Portuguese crustacean trawl fleet fishing effort in 1998-1999*. Life Histories, Assessment and Management of Crustacean Fisheries, La Coruna, Spain, October, 2001.

J. Simoes. and C. Paulo. *MODCHEIAS and Geographical Information Systems - Real Time Flood Forecast*. Climate and Environmental Change, University of Evora, Evora, Portugal, August, 2001.

J. Simoes. *Flood distributed modelling using raster support*. Sistemas Informaticos na Gestao de Recursos Territoriais e Naturais. Castelo Branco, Portugal, July, 1998.

A. Ramos-Pereira, M. Laranjeira, J. Simoes, G. Mota. *Evaluation methodologies of REN on PDM*. Planeamento do Territorio e Politicas de Gestao das Cidades. Braga, Portugal, April, 1996.

## Teaching

UNIGIS Girona, University of Girona Girona, Barcelona  
Tutor 2018  
Teaching the module "GIS Programing in Python", in the online master in "Geoinformática y Programación en SIG".

FOSS4GUK London, UK  
Instructor 8 – 9<sup>th</sup> March, 2018  
Workshop: Introduction to GeoNetwork

SASIG Lisbon, Portugal  
Instructor 20<sup>th</sup> November, 2017  
Workshop: Introdução à Geonetwork

11as Jornadas SIG Libre Girona, Spain  
Instructor 2<sup>nd</sup> June, 2017  
Workshop: Cómo usar contenedores para el despliegue de servicios geoespaciales. Available at: <https://docs.google.com/presentation/d/10EXt1bNA9bgwBf0qJZ7pYU0dTQsjm1bNVba0Y3oBwiM/edit?usp=sharing>

BDigital Barcelona, Spain  
Instructor 10<sup>th</sup> April, 2015  
Internal workshop: Crunching and visualizing Big Data on a Cluster (4 hours). Available at: [https://github.com/doublebyte1/workshop\\_bdigital/blob/master/workshop\\_bdigital.pdf](https://github.com/doublebyte1/workshop_bdigital/blob/master/workshop_bdigital.pdf)

9as Jornadas SIG Libre Girona, Spain  
Instructor 27<sup>th</sup> March, 2015  
Workshop: Análisis de datos geo-posicionados de Redes Sociales con QGIS (4 hours). Available at: [https://github.com/doublebyte1/workshop\\_siglibre/blob/master/workshop\\_siglibre.pdf](https://github.com/doublebyte1/workshop_siglibre/blob/master/workshop_siglibre.pdf)

myESIG, Meeting of the Association of Portuguese GIS Users Lisbon, Portugal  
Co-instructor 10<sup>th</sup> February, 2010  
Workshop T-Work3: Implementation of Geo Web Services using Open Source Software (3 hours).

University of Algarve, FCMA Faro, Portugal  
Instructor 17<sup>th</sup>-21<sup>st</sup> September, 2007  
Introduction to Geographical Information Systems. 40 hours course that corresponds to 1,5 ECTS. The course was integrated in the Geopescas project as an initiative to promote the knowledge of GIS amongst interested scientists and professionals from biology/fisheries.



CEPPA/ISPU

Lecturer

Lecturing of a GIS module in the MSc in Conservation and Evaluation of Fisheries Resources (24 hours).

Maputo, Mozambique

2<sup>nd</sup> May-9<sup>th</sup> June, 2007

UCL, Geography Dept.

Tutor

Tutor of second year geography undergraduate students.

London, UK

2004/2005

UCL, Geography Dept.

Demonstrator

GEOG3010: Earth Observation. Professor Paul Saichs. Undergraduate Course.

London, UK

Winter 2005

UCL, Geography Dept.

Demonstrator

GEOG2021: Environmental Remote Sensing. Professor Paul Lewis. Undergraduate Course.

London, UK

Autumn 2005

UCL, Geography Dept.

Demonstrator

GEOG3010: Data Acquisition and Interpretation. Undergraduate Course.

London, UK

Winter 2003

UCL, Geomatic Engineering Dept.

Demonstrator

Virtual Campus. MSc in GIS and MSc in Remote Sensing.

London, UK

Autumn 2002, Autumn 2003

IST, Civil Engineering Dept.

Demonstrator

Hydraulics laboratory classes. Undergraduate Course.

Lisbon, Portugal

1998

## Other Activities

Marketing Chair and member of the scientific committee at the FOSS4G Europe conference, held in the city of Guimaraes, Portugal, 17<sup>th</sup> – 19<sup>th</sup> July, 2018.

Member of the scientific committee of the Jornadas de SIG Libre conference, held in Girona, Spain, 7<sup>th</sup> – 8<sup>th</sup> June 2018.

Certified attendance to the course "Agile & Scrum Essentials", held by the Cibit Academy, on the 25<sup>th</sup> of January 2018.

Expert Evaluator at the H2020 and EIC SME European Commission Programmes.

Attendance to the "100 Sales and Marketing 101 for FOSS4G Businesses: A workshop for Open Spatial IT Entrepreneurs", at the World FOSS4G, on the 14<sup>th</sup> August 2017, Boston, USA.

Participation in the 18<sup>th</sup> QGIS Developer Meeting, 29<sup>th</sup> April-1<sup>st</sup> May 2017, in Essen, Germany.

Mentor at the Barcelona Docker meetup, during the Docker Global Mentor Week, 14<sup>th</sup>-16<sup>th</sup> November, 2016.

Participation in the 15<sup>th</sup> QGIS Developer Meeting, 27<sup>th</sup>-29<sup>th</sup> May 2016, in Girona, Spain.

Mentor at the FinAppsParty Maker edition, a 24-hour Hackaton hosted by CaixaBank, 6 – 7<sup>th</sup> November 2015, in Barcelona.

Mentor at the FinAppsParty Wearable edition, a 24-hour Hackaton organized CaixaBank and Global Payments, 24-25th November 2015, in Barcelona.

Attendance at the "NoSQL SkillsMatter Meeting BCN", on the 22<sup>nd</sup> of November, 2014, in Barcelona, Spain.

Attendance at the "Strata + Hadoop World Conference", on the 19<sup>th</sup>??21<sup>st</sup> November, 2014, in Barcelona, Spain.

Attendance at the "PAPIs.io '14", the 1<sup>st</sup> International Conference on Predictive APIs and Apps, on the 17<sup>th</sup>-18<sup>th</sup> November, 2014, in Barcelona, Spain.

Organizer of the Open Data Day (ODD) in February 2014, Barcelona, Spain.

Attendance at the "Data Journalism. Work session (IV). Working with Data in the New York Times and Scraping". Workshop organized by the Spanish chapter of the Open Knowledge Foundation, in CCCB, Barcelona, 16<sup>th</sup> December 2013.

Participation in the 10th QGIS Developer Meeting, 12<sup>th</sup>-16<sup>th</sup> September 2013, in Brighton, UK.

Participation in the "Hackathon for Social Good", at Webvisions, Barcelona, 26<sup>th</sup> June 2013.

Attendance at the "NoSQL SkillsMatter Meeting BCN", on the 6<sup>th</sup> of October, 2012, in Barcelona

Completed course "Financial Engineering in C++", at City University, October-December 2008. This hands-on course, covers the basics of option pricing and how to compute prices numerically via Monte Carlo techniques and binomial trees. The course was composed of 10 weekly classes.

Attendance of the "Trolltech Developer Days", in 2006 and 2007, in Munich.

Refereeing for *Environmental and Planning B: Planning and Design* and for the special issue of *Computer, Environment and Urban Systems*, on the topic of Simulation in Spatial Analysis and Modeling (GeoComputation2005).

Review of the book M. Neteler and H. Mitasova (2003), *Open Source GIS - A GRASS GIS Approach*. Environmental and Planning B: Planning and Design, vol 31, Issue 3, 2004.

Workshop on Artificial Life: Rule 110. Bielefeld, Germany, March, 2004.

Demonstration (with C. Pinto and M. Afonso-Dias) of the final software developed on GeoCrust project. Second International Symposium on GIS/Spatial Analyzes in Fishery and Aquatic Sciences, Brighton, UK, September 2002.

Demonstrations (with C. Pinto and M. Afonso-Dias) of the software developed within GeoCrust project:

- General Fisheries Inspection (IGP), Lisbon, Portugal, April, 2002.
- DGPA, Lisbon, Portugal, February, 2002.
- Regional Department for Fisheries (DRP), Funchal, Madeira, Portugal, February, 2002.
- Institute for Fisheries and Sea (IPIMAR), Lisbon, Portugal, December, 2001.
- Whale Factory, Horta, Azores, Portugal, November, 2001.

ESA Summer School: Satellite Navigation Systems for Science and Application. Alpbach, July, 2001.

Presentation of the MapObjects based software, developed in the GeoCrust project. GIS Day event, University of Minho, Guimaraes, Portugal, November, 2000.

Presentation of the Cephalopodes GIS. Meeting of the FAIR project, Aberdeen, Scotland, UK, February, 2000.

## **Other Interests**

Volunteer as part of the online team, in the Greenpeace project of "Quick Response in Great Forest Fires", in the summer 2013. The online team duties consist in: real-time interaction with the offline time, managing social networks and managing a crowd-sourced webmapping platform (Ushahidi).

Volunteer at environmental organization: Greenpeace Catalunya, from January 2013.

Attending drawing classes at the Academia Taure, in Barcelona, from October 2012.

Scuba Diving certification, Portugal, 2002.

Lifeguard Certification, Portugal, 1994.

Course: Introduction to Drawing I and II, on the Fine Arts Society, Lisbon, Portugal, 1992-1993.