CV - Clarisse Kagoyire

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Lecturer and researcher in Geo-Informatics and related with more than thirteen years of experience in academia (teaching and research) and technical project development. With an education profile in Geoinformatics; my interest covers various aspects of geodata management and analytics including remotely sensed data analysis, geospatial databases, spatial data infrastructure (SDI) technologies and geospatial artificial intelligence. With a user-focused mindset, I enjoy improving existing geospatial methods and tools to provide support or solutions across various disciplines, including but not limited to environment, agriculture and health.

I. Education

On-going PhD in Geobiosphere Science with a specialisation in GIS (2021 - 2025)
Lund University – Sweden.

Master of Science in Geo-Informatics (2007-2009)
International Institute for Geo-Information Science and Earth Observation (ITC),
Enschede – The Netherlands

Bachelor of Science with Distinction in Computer Science (2001-2005)
University of Rwanda, Huye - Rwanda

II. Competencies

Programming skills
(Geo)Data science: Python & R
Designing and programming for mobile GIS applications: JavaScript, Java.
Web GIS developer: PHP, Java, JavaScript, SQL, PL/SQL, XQuery, XML, HTML, CSS.

GIS & Remote Sensing Applications
Remote Sensing/Photogrammetry/Image processing: ERDAS Imagine, Envi, ILWIS, PCI Geomatica (OrthoEngine) & ArcGIS Image Analyst
GIS tools: Quantum GIS, GeoDa, ArcGIS for desktop, ArcGIS for Server, uDig
Web mapping tools: OpenLayers, Leaflet, MapServer, Geoserver, Google Earth & Maps, ArcGIS Online, ESRI Geoportal server, Geonetwork Opensource, OpenStreet Map
Mobile GIS data collection tools: Open Data Kit, QField, Survey123 for ArcGIS, Explorer for ArcGIS, Collector for ArcGIS

GPS/GNSS Post-Processing Tools: RTKlib, gLAB

Database Management Systems (spatial and non-spatial)
PostgreSQL/PostGIS, MySQL, MS SQL, ESRI ArcSDE, MonetDB/XQuery, MS Access.

Operating systems: Microsoft Windows, Unix\Linux**.**

Others: LaTeX (a document preparation system).

III. Professional Experience

A. Work Record

Jan 2020 –Present: Lecturer at the University of Rwanda (UR), Centre for GIS & Remote Sensing (CGIS), College of Science and Technology

Main tasks
- Scientific Project development and technical consultancy in the field of Geoinformatics (See lists of consultancies and research projects in the next sections)
- Preparing, writing and publishing scientific papers
- Development and teaching regular courses and short courses (professional trainings) on Introduction and Advanced GIS, Cartography, Remote Sensing, Photogrammetry, Geostatistics, Database Management Systems and Web Mapping

Sept 2009 – Dec 2019: Assistant Researcher /Ass. Lecturer at the University of Rwanda (UR), Centre for GIS & Remote Sensing (CGIS), College of Science and Technology

Main tasks
- Scientific Project development and technical consultancy in the field of Geoinformatics (See lists of consultancies and research projects in the next sections)
- Preparing, writing and publishing scientific papers
- Development and teaching regular courses and short courses (professional trainings) on Intro and Advanced GIS, Cartography, Remote Sensing, Photogrammetry, Database Management Systems and Web Mapping

Dec 2006 – Aug 2009: Web mapping Officer /Tutorial assistant et the National University of Rwanda, the Centre for GIS & Remote Sensing (CGIS-NUR).

Main tasks: Web mapping activities; maintenance of the website of the Centre; involved in web applications development activities, assisted in managing existing datasets within the Centre.

March - Nov 2006: Head of IT Department in the Registrar Office, National University of Rwanda

Main tasks: Maintenance of the student information system; Production and distribution of students' cards; PCs troubleshooting within Registrar office.

August 2004 - April 2005: Distance-learning instructor/facilitator (Part-time job) at the former African Virtual University (AVU), that was based in the Centre for Instructional Technology of the National University of Rwanda.

Main tasks: Video-conferences facilitation for online courses: "Static and dynamic websites development", and "Introduction to programming using Java (Basic)"

B. Consultancies

1. Aug 2021 – Aug 2022: Supervision of the LIDAR Survey and Quality Check of Generated Data. Client: Rwanda Environment Management Authority (REMA).

2.Oct 20018 – Dec 2020: GIS Consultant for the Development of a user-friendly and customized district forest management plans (DFMP) database project. Funded by ENABEL for Rwanda Water and Forest Authority.

3. 2019: Geoinformatics and Cartography expert for the Development of the "Atlas of Rwanda: Agriculture Land Boundaries" for MINAGRI.

4. June 2018 – April 2019: <u>Spatial Statistics & Web Mapping Expert</u> for Analyzing Data of Vital Signs Rwanda (Vital Signs Rwanda), design and creation of the Vital Sign Atlas for Rwanda. Client: Wildlife Conservation Society (WCS), Rwanda.

5. March _June 2018: <u>GIS Specialist/Consultant</u> for Technical Assistance for the Design of ICT and Software Solutions Development for MINAGRI, with the purpose to develop a famer registry and an agricultural land use information system. Under the Private Sector Driven Agricultural Growth (PSDAG), USAID funded project.

6. 2014: <u>GIS Consultant</u>, for the Evaluation of the National Land Use Planning (NULP) portal within SDI framework for Rwanda Natural Resources Authority (RNRA), Department of Lands and Mapping.

7. 2009: <u>GIS Consultant & Data analyst</u> for the Development of the Rwanda Metadata Portal, a portal to spatial data and information (Geoportal requirement analysis, design and development; deployment web mapping services), provision of technical support to plan/prepare the data survey and reporting. Funded by GSDI.

8. 2009: <u>GIS Consultant & Data analyst</u>, for the Development of a spatial database for information on markets and trade-related activities: Rwanda Trade Map. Data collection preparation, data entry facilitation and reporting.

9. 2009: <u>GIS Consultant &Data analyst</u>, for the Design and implementation of the Rwanda Science, Research Human and Equipment spatial database**.** Data collection preparation; Database design and implementation; data entry facilitation; geo-Web application development; reporting.

10. 2006 – 2007: <u>Web programmer</u> for the Codes and Laws of Rwanda (CLR) project. Design and development of the back-end (database) and front-end of a web-based application for managing the Codes and Laws of Rwanda. Project funded by BTC for the Ministry of Justice.

11. 2005: <u>Web Graphic Designer for Rwanda Development Gateway Group</u>**.** Designing graphics and animation for the Web.

C. Research Projects & Appointments

1. 2019: Conference Organiser for AfricaGIS 2019 Conference on Innovations in Geospatial Technologies for Achieving Sustainable Development Goals in Africa, Kigali – Rwanda, 18 – 22 November 2019.

2. June 2019 – Present: Member of Steering Committee of the Laidlaw Scholarship Program in the College of Science and Technology, University of Rwanda

3. 2018-2022: PI for AfriCultuReS project: Enhancing Food Security in AFRIcan AgriCULTUral Systems with the Support of REmote Sensing. Project funded by European Commission through its H2020 programme

<u>Project Principal Investigator</u>, responsible of coordinating all the tasks to be implemented under different work packages and reports to the Consortium WP Leaders, conducting sound research in the field of Remote Sensing applications for Agriculture and generate independent, high quality, and reproducible results.

4. June 2018 – October 2021: Editor of the Rwanda journal of Engineering, Science, Technology and Environment (RJESTE).

5. 2018: Strengthening collaboration for increased biodiversity mobilization on key biodiversity ecosystems of the Albertine rift Region: BID-AF2015-0115-REG

<u>Geo_ICT Specialist</u>, in charge of Data Publication, and customization of the Data collection platform.

6. 2015: Conference organizer for the International Conference on Geospatial Technologies for Sustainable Urban and Rural Development (GeoTech Rwanda 2015).

7. 2010-2014: Healthy Futures research project. Health, environmental change and adaptive capacity; mapping, examining & anticipating future risks of water-related vector-borne diseases in eastern Africa. Project funded by European Union/FP7.

<u>Geospatial data analyst</u> working on the creation of an online project database of Disease information & Database construction. The main responsibilities consisted of carrying out a preliminary analysis, planning and providing guidance for the following tasks: Cleaning and uploading the data gathered in the created project database and undertaking a need assessment, and performing the necessary tasks to host the database of Healthy Futures project.

8. 2010-2013: Participatory GIS for sustainable management of natural resources and food security in Africa: case study of forest resources management. Project funded by the International Development Research Centre (IDRC).

<u>Geospatial data analyst</u> in charge of establishing an architecture for natural resources management information system in order to ensure data interoperability. Including designing and developing a spatial database for forests in the context of PGIS for Natural Resources Management.

IV. Publications

Nduwayezu, G., Zhao, P., **Kagoyire, C**., Eklund, L., Bizimana, J. P., Pilesjö, P. and Mansourian, A. (2023). Understanding the spatial non-stationarity in the relationships between malaria incidence and environmental risk factors using Geographically Weighted Random Forest: A case study in Rwanda. In: Geospatial health. 18, 1, 1184.

Pritchard, R., Alexandridis, T., Amponsah, M., Khatra, N.B., Brockington, D., Chiconela, T., Castillo, J.O., Garba, I., Gómez-Giménez, M., Haile, M., **Kagoyire, C.**, Kganyago, M., Kleine, D., Korme, T., A Manni, A., Mashiyi, N., Massninga, J., Mensah, F., Mugabowindekwe, M., Meta, V., Noort, M., Pérez Ramirez, P., Suárez Beltrán, J., Zoungrana, E. (2022). Developing capacity for impactful use of Earth Observation data: Lessons from the AfriCultuReS project. Environmental Development, 42, p.100695.

Alexandridis, T. K., Ovakoglou, G., Cherif, I. Gómez Giménez, M., Laneve, G., Kasampalis, D., Moshou, D., Kartsios, S., Karypidou, M. C., Katragkou, E., Herrera García, S., Kganyago, M., Mashiyi, N., Pattnayak, K., Challinor, A., Pritchard, R., Brockington, D., **Kagoyire, C**. and Suarez Beltran, J. (2020). *Designing AfriCultuReS services to support food security in Africa*. Transactions in GIS. 2020; 00: 1– 29. https://doi.org/10.1111/tgis.12684

Byizigiro, R. V., Rwanyiziri, G., Mugabowindekwe, M., **Kagoyire, C**., & Biryabarema, M. (2020). *Estimation of Soil Erosion Using RUSLE Model and GIS: The Case of Satinskyi Catchment, Western Rwanda*. Rwanda Journal of Engineering, Science, Technology and Environment, 3(1).

Kagoyire, C.; Farzin, A. and de By, R.A. (2016). *Spatio-Temporal Aggregations over Environmental Data to Analyse the Variability of Coffee Productions*. PowerPoint Presentation. Conference Proceedings of the 11th AARSE International conference. Kampala, Uganda

Kagoyire, C. and de By, R.A. (2013). *Resource - constrained agriculture in developing countries and were Geo-ICT can help*. In: Spatial enablement in support of economic development and poverty reduction / ed. by H. Onsrud and A. Rajabifard. Needham: GSDI Association Press, 2013. 300 p. ISBN: 978-0-9852444-2-2. pp. 191-206.

Kagoyire, C. and de By, R.A. (2012) *Models for Professional Cyclic Activities in VGI with a Case in Coffee Farming*. In: Proceedings of First ACM SIGSPATIAL International Workshop on Crowdsourced and Volunteered Geographic Information. Redondo Beach, California, USA. ISBN: 978-1-4503-1694-1. pp. 70-76.

Kagoyire, C (2011) *Web geoprocessing services on GML with a fast XML database*. Rwanda Journal, Vol.20, Series C: Mathematical Sciences, Engineering and Technology.

Akinyemi, O.F. **and Kagoyire, C**. (2010) *The Rwanda Metadata Portal: A Web Catalogue Service*. In: International Journal of Spatial Data Infrastructures, Vol.5, pp 382 – 401.

V. Conferences, Seminars and Workshops *(selected)*

AfricaGIS 2019 Conference on Innovations in Geospatial Technologies for Achieving Sustainable Development Goals in Africa, Kigali – Rwanda, 18 – 22 November 2019.

AfricaGIS 2017 Conference on Geospatial and Statistical information imperatives for the 'Africa We Want', Addis Ababa - Ethiopia, 20th-24th-November,2017.

The 11th AARSE International conference took place in Kampala, Uganda from 24th to 28th October 2016

Smart Rwanda days 2014 - "Digitizing Rwanda" , 2 days conference co-organised by the Ministry of Youth and ICT, Rwanda Development Board and Rwanda Utility Regulatory Authority, Kigali, Rwanda, 2nd -3rd Oct 2014.

AfricaGIS 2013 Conference & GSDI 14 World Conference, joint conference on Spatial Enablement in Support of Economic Development and Poverty Reduction, Addis Ababa - Ethiopia, 4th-8th November,2013.

ACM SIGSPATIAL GIS 2012, the 20th ACM SIGSPATIAL International Conference on Advances in GIS (ACM SIGSPATIAL GIS 2012), California - USA, 6th-9th November, 2012.

Workshop on Opportunities & Challenges for a thriving Geo-ICT sector in Rwanda, Kigali – Rwanda, 6th-7th October, 2011.

AGILE 2011, the 14th AGILE International Conference on Geographic Information Science, Utrecht - The Netherlands, 18th-21st April, 2011.

GIScience 2010, the 6th International conference on Geographic Information Science, Zurich - Switzerland, 14th-17th September, 2010.

AfricaGIS 2009, International Conference on Geospatial Information and Sustainable Development in Africa: Facing Challenges of Global Change, Kampala - Uganda, 26th-30th October, 2009.

The 2nd International Scientific Research Conference, Huye - Rwanda, 19th-21st October, 2009.

Acacia Research and Learning Forum hosted by International Development Research Centre (IDRC), Dakar – Senegal, 5th-8th October, 2009.

IDRC–ACACIA workshops on Natural Resources Management and Information and Communication Technologies (ICTs) & Geo-Spatial Information System, Dakar – Sénégal, 12th-16th May, 2009.

LBS 2008, 5th International Symposium on LBS (Location-Based Services) & TeleCartography, Salzburg - Austria, 26th-28th November, 2008.

VI. Professional Trainings *(selected)*

Machine Learning for Earth Observations (ML4EO) Bootcamp: A Training of Trainers (3 – 14 May 2021)

Environmental Data Quality at ITC, University of Twente. Enschede, The Netherlands (19-21 June 2012).

VGI and Process Ontology at Vespucci Summer Institute on GI Science. Florence, Italy (2011)

SERVIR-Africa Regional training on "Web publishing and spatial data management", Nairobi, Kenya (2009).

Google Earth Outreach Trainers Workshop at The AfricaGIS Conference, Uganda (2009).

Dynamic Websites and Content Management Systems, Huye, Rwanda (2004).

VII. Awards, fellowships and grants

Google travel grant Award, ACMGIS 2012 Google Travel Grants for International Students (5 winners among 38 applicants), 2012.

Peter A. Burroughs Award, Best project on VGI at the Vespucci Summer Institute on GI Science, 2011.

Two travel grants, by the International Development Research Center, 2009.

Travel grant, by the Regional Center for Mapping of Resources for Development, 2009.

VIII. Professional Memberships

The International Association for Mathematical Geosciences (IAMG)

Association for Computing Machinery (ACM)

EIS-Africa (A network for the co-operative management of Environmental and geoSpatial Information in Africa)

The International Geospatial Society (IGS)

Organization for Women in Science for the Developing World (OWSD)

IX. Languages

Kinyarwanda (native)

English & French (speak fluently, read/write with high proficiency)

Swahili (basic knowledge: speak and read)

I certify that all information stated in this curriculum vitae is true and complete to the best of my knowledge.

Date, 27 June 2023

Clarisse Kagoyire