

Ivan Palmegiani, MSc

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Personal address and phone number available on request



Profile

Environmental researcher with cross-disciplinary expertise including natural sciences, landscape ecology as well as geographic information systems (GIS), data analytic, and machine learning (ML). Capable of communicating data and analysis results in spoken, written and visual form. Earth Observation enthusiast. OpenStreetMap contributor. Proponent of nature-based solutions for climate change adaptation and mitigation. Team player, also able to take charge of tasks individually. Constructive critical thinker. Solution oriented and careful about details. Strong analytical mindset and excellent organization skills. Highly motivated and positive towards challenges. Moved by inherent curiosity and engaged in continuous learning.

Technical expertise

Advanced QGIS | Python for Geospatial Analysis and Remote Sensing | R Statistical Computing | Multi-Dimensional Data Visualization - Grammar of Graphics | Data reporting in R-Markdown and Jupyter notebooks | Geodatabase Management in PostgreSQL-PostGIS | Linux Bash and Command Line Interface Tools | Version Control in Git & GitHub | Management of Virtual Environments in Conda | Containerization in Docker | Fundamentals of Web-GIS Development

Languages

English - IELTS certification level C1 • German - TELC certification level B1 • Italian - mother tongue • Spanish - fluent • Portuguese - fluent

Professional Experience

Research Fellow at [PlanAdapt Climate Co-Adaptation Lab](#)

Fellowship, *since Apr. 2021*

Proposal development with focus on GIS and Earth Observation technologies for Nature-Based Solutions and sustainable agriculture.

External Geospatial Data Consultant at [WWF Water Risk Filter](#)

Contract, *Feb. 2021 - ongoing*

Working closely with the technical project manager, I review methodologies to analyze corporate water risk data, design data visualizations and global water risk maps for efficient data communication in stakeholder engagement. I'm in charge for the automation of data analysis and reporting workflows.

Tech stack: R GIS packages, Rstudio, R-Plotly, MS Office, Conda, Git & GitHub.

External Geospatial Data Scientist at [SmartCloudFarming GmbH](#)

Contract, *Mar. 2020 - Feb. 2021*

Research and development in a production context: following the principles of agile development, I have coordinated a small team of data professionals and personally worked at the development of a minimum viable product (MVP) for the estimation of water content in agricultural soil.

- Performed literature research to identify state-of-the-art methods for the estimation of soil water content and soil organic carbon from satellite imagery
- Presented key findings in bibliographical reports
- Identified suitable data sources to facilitate programmatic access to satellite imagery, and to ground data
- Developed data science pipelines to source and composite satellite imagery to train machine learning (ML) models, and prepared ground data to test and validate predictions
- Co-developed and fine-tuned ML models to predict soil moisture content from satellite data. The accuracy of predictions is satisfactory ($R^2 > 0.95$, $RMSE < 0.05$)
- Generated interactive data visualizations and 3D maps to report model predictions to executives
- Developed dashboards to display ground data and model predictions to investors, and to potential clients

Tech stack: Python GIS libraries, QGIS, sklearn, Python-Plotly, Streamlit, Conda, Docker, PostgreSQL-PostGIS, Google Earth Engine, Google Cloud Platform, Google App Engine

External Data Consultant at [Earth Ratings UG](#)

Contract, *May 2020 - Jun. 2020*

Explored CDP data and methodologies | Identified and sourced additional data sets on Corporate Environmental Footprint (CEF) and Social Responsibility (CSR) | Developed a web scraper program to source publicly available data in accordance with the respective terms of use | Converted raw contents to tabular formats and integration of open data sets from several sources | Exploratory analyses and visualization of the resulting data sets

Tech stack: all technical work was performed in Python

External Data Entry Specialist at [University of Primorska](#)

Contract, *Jan. 2020*

The role implied the revision of data storage procedures at the Conservation and Population Genetic research group. The tasks included cleansing of genetic data sets and migration from data sheets to database tables, development of functional solutions for data storage in relational databases, automating data querying, and advising the research team on wildlife data management. The work has been conducted using open-source software for data cleansing and manipulation, while proprietary database solutions (Microsoft Access) have been used for data storage.

Tech stack: data munging in Python, user interfaces for data entry were generated with Microsoft Access

Professional re-qualification

Oct. 2018 - Nov. 2019

Data Science and Python programming courses | German language course | Conflict management and non-violent-communication (NVC) self-training | Personal development

Graduate Research Assistant at [Leibniz Institute for Zoo and Wildlife Research](#)

Full-time, *Apr. 2013 - Jun. 2018*

Evolutionary ecology studies of the cheetah in central Namibia with particular focus on the mating system

Desk research activities:

- Development of data collection protocols and field project management
- Planning and supervising field campaigns for the live-capture of cheetahs
- Spatial and movement analyses of GPS-telemetry data
- Modeling distribution of the species and its use of space
- Modeling individual movement patterns and interactions
- Data management in [Movebank](#)
- Design and maintenance of PostgreSQL-PostGIS database
- Hypothesis testing
- Presenting scientific results to the general public through talks, data visualizations and reports
- Organization of scientific symposia

Field activities:

- Executing live-capture campaigns of cheetahs using custom-build box traps
- Assisting in the live-capture of leopards using custom-build box traps
- Collected and analyzed presence-absence data via camera-trap surveys
- Engaged with local communities and stakeholders for the mitigating human-wildlife conflict
- Coordinated data collection in the field, supervised technicians and volunteers

Graduate Research Assistant at [CIBIO - Research Center in Biodiversity and Genetic Resources](#)

Full-time, *Feb. 2012 - Feb. 2013*

Investigating the spatial ecology of endangered wildlife species in the Iberian peninsula (Portugal and Spain)

- Collected and analyzed satellite telemetry and environmental data
- Modeled species distribution in relation to environmental variables using linear and nonlinear regression models
- Designed and maintained relational (geo)databases

Graduate Research Assistant at [Department of Zoology and Evolutionary Genetics, University of Sassari](#)

Full-time, *Nov. 2010 - Nov. 2011*

Investigating spatial distribution, abundance and reproductive success of wolves in central Italy

- Collected data on the presence-absence of wolves, and environmental variables
- Collected presence-absence data via camera-trap surveys
- Modeled presence-absence of wolves with multi-linear regression models
- Collected and analyzed bio-acoustic data

Education

Master of Science (MSc), Jul. 2010

Environmental Sciences and Natural Resources Management, University of Sassari.

Grade: 110/110 *Summa cum Laude*

Systems ecology, landscape ecology, regional geology, pedology, sedimentology, wildlife conservation and management, conservation genetics, environmental modeling, statistical inference, advanced statistical theory, environmental economics

Training courses

Advanced QGIS with [Official Certification](#), Sept 2021

Spatial Thoughts

Modeling and Automating GIS Workflows | Visualizing Time Series and 3D Data | Advanced Expressions

ARSET - Species Distribution Modeling with Remote Sensing, Aug. 2021

Applied Remote Sensing Training Program, NASA

Overview of Species Distribution Models (SDMs) | Data Sources for Species Distribution and Remote Sensing Data for Landscape Characterization | Tools for conducting SDM for a variety of ecosystems such as Wallace R-based platform for modeling of species niches and distributions

ARSET - Using Google Earth Engine for Land Monitoring Applications, Jun. 2021

Applied Remote Sensing Training Program, NASA

Navigate the GEE interface to explore remote sensing datasets relevant to land monitoring | Execute JavaScript commands to retrieve satellite data and process imagery for analysis | Complete a supervised land classification along with an accuracy assessment in GEE | Apply algorithms to derive a time series of environmental parameters and calculate differences between years to detect landscape changes | Illustrate the capabilities of cloud-based raster computing for land management applications

ARSET - Satellite Observations and Tools for Fire Risk, Detection, and Analysis, May 2021

Applied Remote Sensing Training Program, NASA

Terminology regarding type and components of fire (pre, during, post) | Climatic and biophysical conditions pre-, during-, and post-fire | The satellites and instruments used in conducting fire science | The applications of passive and active remote sensing for fires | How to visualize fire emissions and particulate matter | The use of tools for active fires, emissions, and burned areas | How to acquire data for conducting analysis in a given study area

Copernicus MOOC, Sept. 2020 - Dec. 2020

Copernicus programme of European Union and European Space Agency

Overview on the programme | Copernicus data and services | Renewable Energy | Security and Emergency Management | Resource Management | Land Use and Management | Air quality, water pollution and ecosystem health monitoring | Integrating Copernicus data with other sources: Machine Learning, AI | Ideation | Prototyping | Developing | Collaboration

Echoes in Space, July 2020

EO College, European Space Agency - Friedrich-Schiller-Universität Jena

History of Radar technology and the discovery of electromagnetic waves | Image acquisition | Geometry of airborne and space borne Radar systems | Land applications of Radar remote sensing | Applications of radar remote sensing over Water | Application of Radar remote sensing for Hazard management

Data Science Bootcamp, Aug. 2019 - Nov. 2019

Business Trends Academy

Data protection and ethical matters | Linear and nonlinear regression | A/B testing | Hypothesis testing |

Data visualization in Tableau | Object oriented programming (OOP) | Python modules and functions | Pandas and NumPy | Multiprocessing and multithreading | RESTful API | Webscraping | Neural Networks and Machine Learning techniques | Keras and TensorFlow

Movement Ecology Summer School, Aug. 2015

Population Ecology Research Group, University of Zurich

GIS and remote sensing in R | Characterization of movement trajectories | Home range analysis | Habitat selection modelling | Integration of data from alternative sensors and future perspectives

Next Generation Data Management in Movement Ecology, Jul. 2015

IRSAE, International Research School in Applied Ecology - FEM, Edmund Mach Foundation

Spatial database management in PostgreSQL/PostGIS | Movement data analysis in R

Multivariate Data Analysis for Ecology and Evolution in R, Nov. 2012

CIBIO - Research Center in Biodiversity and Genetic Resources

Explanatory methods (PCA, PcoA, MDS, clustering) | Inferential methods (Randomization, bootstrap, jackknife, Monte Carlo, GLM, PLS, CanCor, Mantel Test) | Evolutionary and ecological Non-Independence (PGLS, PIC, rates of change, spatial autocorrelation, spatial GLS) | Model selection (i.e. Hypothesis testing vs information criteria) | Analysis of dispersion (i.e. Convex hulls area/volume, nearest neighbor, centroid size, eccentricity)

Biostat 2011 – Statistic inference in Biology and Human Sciences, Jun. 2011

UniASTISS, Department of Statistics - Purdue University, Department of Economy - UniMORE, Italian Institute for Philosophical Studies, Department of Statistics - Bologna University, Department of Human and Animal Biology - University of Turin, Department of Social Research - University of Eastern Piedmont, Asti Association for Scientific and Technological Development

Linear and nonlinear regression models | Non-parametric regression model | Principal components analysis | Factor analysis | Correspondence analysis | Cluster analysis | R coding

Hobbies and interests

Cooking • Indoor gardening • Outdoor sports and activities such as climbing, bouldering, hiking, biking, canoeing, camping • Tai Chi • DIY and Handicraft • Music and Arts • Urban agriculture