Ivan Palmegiani, MSc

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LinkedIn Profile
GitHub

Professional Profile

My expertise results from the fusion of ecosystem thinking and technical skills.

I hold expert knowledge and professional experience in biodiversity and wildlife monitoring, landscape ecology, as well as water and soil management. I'm familiar with European Union directives, and well informed about international initiatives and partnerships aiming at the conservation, restoration, and sustainable management of natural resources.

I can identify, collect and analyse quantitative data as well as satellite imagery to address pressing environmental issues involving land ecosystems, and make sense of the numerical results to identify risks and opportunities inherent each case study.

Technical Skills	
QGIS	Advanced
Python for Geospatial Analysis	Advanced
R Spatial, Stats and Charts	Advanced
Conda Management	Advanced
PostgreSQL-PostGIS	Intermediate
Google Earth Engine	Intermediate
Linux Bash & CLI Tools	Intermediate
Containerization in Docker	Beginner

Organizational Skills	
Self-Motivation	Exceptional
Physical & Mental Organization	Excellent
Problem Solving	Excellent
Critical Thinking	Excellent
Communication	Very good
Prioritization	Very good
Planning	Very good
Teamwork	Very good

Languages

English - Fluent • Italian - Native • Spanish - Fluent • Portuguese - Fluent • German - Intermediate

Professional Experience

Geospatial Data Consultant at Världsnaturfonden AB

Contract, *July. 2021 - ongoing*

Analysed data to estimate corporate water risks at site level | Generated data visualizations such as charts and maps | Produced reports and slide-shows presentations in accordance with WWF Water Risk Filter reporting process and standards

Tech stack: R Spatial, Tidyverse, R-Plotly, OfficeR, RStudio, MS Office, Conda, Git & GitHub

Research Fellow at PlanAdapt Climate Co-Adaptation Lab

Fellowship, *Apr. 2021 - ongoing*

Proposal development with focus on GIS and Earth Observation technologies for the design of Nature-Based Solutions.

Geospatial Data Consultant at WWF Water Risk Filter

Contract, *Feb. 2021 - ongoing*

Reviewed methodologies for corporate water risks assessment and scenarios analysis in close cooperation with the technical project manager | Designed data visualizations and maps of global water risks for efficient data communication in stakeholder engagement | Established automated workflows for data analysis and for data reporting

Tech stack: R Spatial, Tidyverse, R-Plotly, OfficeR, RStudio, MS Office, Conda, Git & GitHub

Geospatial Data Scientist at SmartCloudFarming GmbH

Contract, *Mar. 2020 - Feb. 2021*

Coordinated a small team of data professionals in a production context, i.e. research and development. Developed a minimum viable product (MVP) for soil moisture monitoring from Earth Observation data

- 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 squared > 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 Spatial Modules, Jupyter, QGIS, Google Earth Engine (Python API), Scikit Learn, Python-Plotly, Streamlit, Conda, Git & GitHub, Docker, PostgreSQL-PostGIS, Google Cloud Platform, Google App Engine

Data Scientist at Earth Ratings UG

Contract, *May 2020 - Jun. 2020*

Explored CDP data and methodologies | Identified additional data sources on Corporate Environmental Footprint (CEF) and Social Responsibility (CSR) | Developed a web scraper program to source publicly available data sets in accordance with the respective terms of use | Transformed unstructured data into 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

Data Management Consultant at University of Primorska

Contract, *Jan. 2020*

Revised data storage procedures at the Conservation and Population Genetic research group | Data wrangling | Migration from data sheets to relational database (ETL) | Automation of data queries | Advising the research team on data management

Tech stack: data wrangling in Python, forms for data entry were generated in 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*

Investigated the behavioural ecology of the cheetah in central Namibia, and engaged with local stakeholders and communities for the mitigation of human-wildlife conflict

Desk research activities:

- Developed data collection protocols
- Managed field operations
- Planned and supervised field campaigns for the live-capture of cheetahs
- Performed spatial and movement analyses of high-resolution GPS telemetry data
- Modeled distribution of the species and use of space in relation to landscape features, land use, land cover, and natural vegetation phenology
- Modeled individual movement patterns and interactions between individuals
- Managed GPS telemetry data in Movebank
- Designed and maintained PostgreSQL-PostGIS database
- Formulated evolutionary hypothesis and performed statistical testing
- Presented scientific results to local stakeholders through talks and presentations
- Organized scientific symposia

Tech stack: QGIS, R Stats, R Spatial, Rstudio, PostgreSQL-PostGIS

Field activities:

- Executed live-capture campaigns for biotagging cheetahs
- Assisted in the live-capture for biotagging leopards
- Collected presence-absence data via camera-trap surveys
- Engaged with local communities and stakeholders with the aim of 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*

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

Field activities:

- Undertaken live-capture campaigns for biotagging wolves
- Collected presence-absence data along line-transects and via camera-trap surveys
- Engaged with rural communities in the attempt to mitigate human-wildlife conflict
- Joined field expeditions to Southern Portugal and Spain in support of *EU Life* project for the conservation of the Iberian Lynx (Reference: LIFE08 NAT/P/000227, Acronym: Habitat Lince Abutre)

Desk research activities:

- Modeled habitat selection and distribution of species in relation to land use and land cover

Tech stack: QGIS, R Stats, R Spatial, Rstudio

Graduate Research Assistant at Department of Zoology and Evolutionary Genetics, University of Sassari

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

Investigated spatial distribution, abundance and reproductive success of wolves in Central and Northern Italy

Field activities:

- Undertaken live-capture campaigns for biottaging wolves
- Estimated pack size and reproductive success via wolf-howling surveys
- Collected presence-absence data along line-transects and via camera-trap surveys
- Engaged with local communities in the attempt to mitigate human-wildlife conflict

Desk research activities:

- Performed biocustical analysis of wolves vocalizations
- Ensured proper storage and management of spatial data via GIS softwares

Tech stack: QGIS, R Stats, R Spatial, Rstudio

Latest Volunteer Activities

The United Nations Office for Outer Space Affairs

Aug. - Sept. 2021

Generated contents for the Space4Water portal, title of the article: "The water cycle from space: the central role of satellite-informed models in corporate water management". *Link to the article*

OpenStreetMap

June 2021 - ongoing

Added, completed and/or updated spatial features such as roads, intersections, forest patches, agricultural lands and respective metadata in Rieti province and immediate surroundings, in Central Italy, plus minor contributions to features over the city of Berlin, in Germany.

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

Bachelor of Science (BSc), Feb. 2008
Environmental Sciences, University of Perugia.
Grade: 107/110

Principles of biology, geology and ecology. The course of study covered a wide range of subjects to provide students with the solid background required to undertake ecological and environmental studies.

Training courses

Danube Floodplain Management, Oct. 2021

Technical University of Munich - EU Interreg Project

Principles of floodplain management and its relevance to EU legislation | Knowledge on technical aspects such as modelling, ecosystem services valuation, stakeholder engagement | Principles of feasibility studies and cost-benefit analysis | Presentation of newly developed Web-GIS tools for evaluating floodplains and their restoration potential

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 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