

Position Title: Geospatial Data Scientist & Engineer, AD3

Reports to: Director of Forestry Technology & Analytics

Location: This position may work from our Portland office or work remotely within our region (must be based in Oregon, Washington, California, or Alaska)

Salary Range: \$85,000 - \$96,000

Posting Date: May 16, 2022

Application Deadline: Tuesday, May 31 2022 11:59pm PST, position open until filled. Review of applications will begin on June 1

Anticipated Start Date: July 20, 2022

*****This position is one of two roles that evolved from a previously announced Natural Resource Data Scientist (NRDS) position. The roles and responsibilities described for the Geospatial Data Scientist & Engineer are similar, but slightly different from the NRDS advertisement. [Watch a recorded Information Session about Ecotrust and the NRDS position here.](#)*****

Overview

Who we are

Ecotrust creates and accelerates triple-bottom-line innovations to benefit our region and inspire the world. On the farm, at the coast, in the forest, and across our cities, we work in partnership towards an equitable, prosperous, climate-smart future. Since 1991, we have created durable change and sparked ideas across the globe. Ecotrust holds a deep commitment to equity and diversity as core principles integral to the work we do. As we add new members across all levels of the organization, we seek diverse perspectives and lived experiences that we believe foster learning, creativity, innovation, and equity. Learn more at Ecotrust.org.

Job Summary

The Geospatial Data Scientist & Engineer (GDSE) will lead reproducible research for monitoring, predicting, and communicating conditions of lands, waters, and communities based on ground-based and remotely-sensed data through the use of open-source data science and software engineering. They will develop and apply computer vision, machine learning, and probabilistic modeling methods to detect and characterize changes in forest ecosystems and communities over time driven by forest management, climate change, and natural disturbances. They will provide technical leadership for the development and implementation of new data-driven projects or activities to support several Ecotrust teams working in forests, food systems, and fisheries.

Who you are

You bring a love of data, coding, predictive modeling, and ecosystem science along with a commitment to drive radical, practical change, to collaborate with humility, to enable others, and to put equity at the center of your work. You weave together expertise in Python programming, geospatial and image analysis, and computing to deliver actionable research. You flex expertise in data science and machine learning, developing rigorous analytical workflows to acquire, clean, and interpret data using open-source tools and techniques, tempered with humility, appreciation, and interest in learning from and honoring multiple ways of knowing. You are

eager to learn from others and collaborate, and are motivated to ensure your work contributes to broader efforts at Ecotrust and with our partners to advance Indigenous sovereignty and self-determination, to identify and address racial disparities, and to make a meaningful impact in terms of land, water, and climate justice.

Primary Responsibilities

The activities listed below represent the core functions of this position. A candidate will be assessed on their ability to successfully fulfill or quickly learn these functions.

The Geospatial Data Scientist & Engineer (GDSE) will lead and collaborate closely with internal and external partners on a multi-year project incorporating satellite imagery, forest measurements, and economic activity data to produce actionable information characterizing diverse climate, community, and biodiversity impacts associated with timber production from different landowner types and timber supply areas across the United States. This will include developing and applying Machine Learning and computer vision models that predict diverse land and water attributes, as well as models that detect and classify landscape disturbances (e.g., harvest, fire, insect/disease, etc.) using satellite data, as well as models that estimate timber harvest and output by assimilating data derived from satellites as well as ground-based surveys of forest inventory and economic activity.

With the support of Ecotrust's staff with expertise in forest resources, cartography and UI/UX design, the GDSE will contribute to natural resource mapping and assessments to support forest assessment and stewardship planning efforts led by and for partners including American Indian Tribes and non-industrial private forest owners including family forests, land trusts, and community-based organizations. This work will include development and refinements to existing models that predict and delineate forest conditions into user-appropriate management units known as "stands".

The GDSE will contribute to the management of project timelines, budgets, and contribute to grant writing and reporting. The GDSE will apply and strengthen leadership skills for overseeing technical and/or project management aspects of analytical projects ranging from project conception, planning, and implementation, including collaboration and relationship-building with diverse partners and organizations. In line with Ecotrust's Racial Equity Action Plan and new Strategic Plan, the GDSE will be expected to apply tools such as Ecotrust's Trauma-Informed Equity Lens at the outset of project planning and policy discussions, and be able to clearly describe how the work we are pursuing will help to reduce racial disparities and help advance climate and economic justice.

(Responsibilities and tasks outlined in this document are not exhaustive and may change as determined by the needs of the organization or employee.)

Key Qualifications and Transferable Skills

Transferable skills may be gained through education, work experience (including the military) or life experience that are relevant for this position. Studies have shown that women and people of color are less likely to apply for positions

where they do not meet 100% of the listed skills and qualifications. Even if you do not meet all of the requirements described, if you believe you are a good fit for the position, we encourage you to apply.

- Commitment to Ecotrust's core values and mission to create economic opportunity, social equity, and environmental well-being. Commitment to advancing racial equity and addressing climate change.
- Expertise, with 5+ years experience in geospatial data processing and analysis with raster and vector data, with substantial experience of at least 2-3 years performing these analyses with Python (e.g., rasterio, geopandas, xarray) along with the broader scientific Python stack (e.g., numpy, pandas, scipy, scikit-learn, matplotlib).
- Substantial experience (at least 2-3 years) utilizing web services for fetching and/or analyzing geospatial data (e.g., web APIs, Google Earth Engine, Pangeo)
- Fluency in data science fundamentals, including common data types and pre-processing, approaches to exploratory data analysis, common predictive tasks, model fitting and scoring, model comparison and critique, and addressing uncertainties and errors.
- Substantial experience with at least 2-3 years working with computer vision and deep learning tools and frameworks in Python, including convolutional neural networks and image-processing workflows and models for common computer vision tasks such as semantic segmentation, object detection, as well as image and object classification (e.g., scikit-image, opencv, albumentations, pytorch, tensorflow).
- Substantial experience with at least 2-3 years working with tools, techniques, and best practices in data science, including version control and collaboration tools (Git, GitHub), reproducible computing and development environments (e.g., conda, docker), the Linux operating system, relational databases, and common data science tools such as Jupyter Notebooks. Examples of code contributions to open-source projects are strongly encouraged.
- Familiarity with test-driven development and continuous integration (e.g., pytest, Travis-CI).
- At least 3-5 years experience contributing to or coordinating on collaborative geospatial and/or computer programming projects.
- Ability to communicate effectively and with humility in writing as well as in meetings and presentations for technical and non-technical audiences, as well as demonstrated competency in interpersonal aspects of justice, equity, diversity, and inclusion (JEDI), such as an understanding of how our identities and values influence interactions with others and the ability to communicate and interact with people with different cultures, backgrounds, and perspectives.

Other Useful Qualifications

The items listed below represent qualifications that are desirable in a candidate, but are not required. Some of these may be gained through professional development and coaching once on board.

- Familiarity or experience with tools and techniques for Bayesian data analysis and/or data assimilation, including hierarchical Bayesian models, Markov models, State-Space models, etc.
- Familiarity or experience with the preparation and documentation of benchmarking datasets for Machine Learning applications (e.g., Spatio-Temporal Asset Catalogs).
- Relationships or experience developing and maintaining relationships with tribal communities, including familiarity with and/or lived experience in advancing Indigenous sovereignty and self-determination.
- Experience with cloud-based computing and storage systems, as well as cloud-optimized data formats.
- Experience analyzing or modeling demographic, economic activity, and census data.
- Experience with active remote sensing systems and data processing and analysis including lidar and radar.
- Knowledge of ecosystem science, particularly related to Pacific Northwest ecology and stewardship approaches.
- Familiarity with user-centered design and engineering principles and best practices. Awareness of research approaches founded in knowledge co-production and/or involving traditional knowledge.
- Experience or familiarity with principles and practices of attributional Life Cycle Assessment or supply chain impact assessment.
- Familiarity or experience with ESRI geospatial tools and services.

Additional Information

We believe great benefits make work better: Ecotrust offers equity-centered benefits that strive to recognize employees as whole people and prioritize their overall wellbeing. Benefits include medical, dental, and vision insurance with employee contributions scaled to income, tax-deferred and Roth retirement plans with employer base contributions, term life insurance, and disability coverage. Ecotrust invests in employees' professional development and personal growth. We offer other fun perks like plentiful paid time off, summer Fridays, a week off over the winter holiday season, retreats, and summer fun days.

Working conditions: The GDSE will have the opportunity to travel regionally (California, Oregon, Washington) to participate in meetings with partner organizations once every 1-3 months. These meetings and other regional events we participate in commonly involve field trips into forests. The vast majority of the GDSE's day-to-day work will be at a computer. The GDSE

may travel to present our work at regional and national conferences and events about 4-6 times per year.

COVID-19 Response: Ecotrust recognizes that the COVID-19 pandemic has disproportionately negative impacts on Black, Indigenous, and other people of color, immigrants, parents, caregivers, frontline workers, and others. While this is a full time position, Ecotrust offers the flexibility necessary to manage COVID-19 constraints including flexible schedules, working remotely, and use of paid sick leave for caregivers and those directly affected by COVID-19. Ecotrust recognizes these are unprecedented times and wants to remove any barriers that would prevent anyone disproportionately affected by the pandemic from applying.

Ecotrust is an Equal Opportunity Employer. We believe that a diverse staff of qualified, highly-skilled, and creative individuals is necessary to achieve the vision and mission of the organization. We welcome and encourage applications from candidates who can contribute to the diversity of our workforce across a range of dimensions. Individuals who identify as Black, Indigenous, Latinx, Asian, Pacific Islander, or other People of Color, people who are queer, trans, non-binary, people with disabilities, people who are immigrants, people from poor and working class backgrounds, and people who are/have been system-impacted are strongly encouraged to apply.

Click [here](#) to learn more about equity at Ecotrust, including our official equity statement and annual racial equity action plans and reports. We expect all our employees to share a commitment to justice, equity, diversity, and inclusion, and always seek ways to improve how well we live these values. If we can make the application process easier through accommodation in the recruitment process, please let us know. Once you have applied, we welcome your feedback on how you have experienced our values around diversity, equity, and inclusion in the recruitment process.

Veterans' Preference: Under Oregon Law, qualifying veterans may apply for veterans' preference for this recruitment. Please send all required documentation to ssobell@ecotrust.org by the closing date of the recruitment.

Accommodation under the Americans with Disabilities Act: We gladly provide reasonable accommodation to anyone whose specific disability prevents them from completing an application or participating in this recruitment process. Please reach out to ssobell@ecotrust.org in advance to request assistance.

How to Apply: Apply via our [careers page](#). No cover letter is required. Instead, please answer five brief narrative questions provided in the application.

The Selection Process: After the initial review of applications submitted by May 31, new applications will be reviewed on a rolling basis (every two weeks). During this period, after

submitting an application, all applicants should expect to hear a response from the hiring team on or before the Friday following the week the application is submitted.

In general, the evaluation process includes scoring an applicant's resume and short-answer responses against a common rubric, followed by phone and/or video interviews, and reference checks. Each of these steps will be completed before any job offers are made.

To be successful, an applicant must be authorized to work in the United States. Ecotrust is unable to sponsor H1-B Visas at this time.

[Watch a recorded Information Session about Ecotrust and for an earlier iteration of this position here.](#)