Proposal: Reduce Data Burden for GHG Calculator

We are looking for a group of high energy students passionate about climate change and making an impact on the world.

Company Background

Perennial (www.perennial.earth) is a research and technology company developing innovative methods to incentivize and scale the adoption of regenerative agriculture programs. Based in Boulder, Colorado USA, the company has been working for multiple years to commercialize ongoing research in data-driven modeling and land remote sensing for scalable, robust soil carbon quantification. Perennial has received over $25M USD in public and private funding to provide efficient, accurate, low-cost carbon measurement technologies and powerful digital tools for agricultural carbon projects, and is trusted by companies, farms, and organizations throughout the United States. Perennial's industry-leading technology has been recognized by TIME, Forbes, NASA, and Fast Company.

Project Summary

Perennial is working to expand product offering including modeling emissions from sources other than soil organic carbon. To do this, perennial collects data from agricultural farmers to model sustainability metrics such as the carbon footprint (greenhouse gas emissions) of crops. Currently, enrolling in these programs requires growers to provide upwards of one hundred pieces of data about how they managed their crops in any given year. We have a desire to simplify how much data we collect from growers to lower the burden of entry for these programs. Our vision for this is research, extract, and harmonize various data sets for specific attributes to ultimately make educated guesses based on a variety of factors including geography, climate, crop type, etc. This project specifically looks at reducing fertilizer type and rate data sets of various crops around the world. However, we have many attributes that could use help, so students can tackle more if they are interested and time allows.

The Team

Preferred Team Size 3-4

Location

Remote

Intellectual Property

- Each team member will be asked to sign an NDA with JD Carluccio and Perennial.
- Perennial would require that the project and all parts be assigned to and owned by the company

Student Benefit

- Opportunity to work on the development of a geospatial product in a very nascent and fast growing field
- Learn to scrape, harmonize, and design model parameters from large and diverse data sets
- Learn basics of APIs and data schemas
- Positively impact climate change by working on something with real-world impact
- Potential future internship opportunities available

Useful Skills/Software

Requirements:

- Python and Javascript experience
- Exposure to Python libraries (vary based on dataset) and Git
- some classes in the core sciences around biology, environmental science, or ecosystem science is a plus

Skills Gained through this Project:

- Geospatial data processing
  - Experience working with GDAL, rasterio, geopandas

- Exposure to RESTful API

Contact Information

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