

Satellite Imagery Parking Land Use Identification

Josh Rands, Founder & CEO, TerraCity, LLC (josh@terracity.ai)

Organization Background

TerraCity LLC was founded in 2022 with the mission to empower cities with technology for sustainable infrastructure planning. Coming into existence at a pivotal moment for both digital technology and climate change, TerraCity has positioned itself to be a leader in sustainable development by developing AI-powered technologies to assist in the sustainability transition. Shortly after being founded, TerraCity won a Phase 1 SBIR grant from the US Department of Energy to develop technology to support these goals.

Project Description

TerraCity's transportation analytics software leverages AI to predict how transportation projects will impact a given community. The algorithms and models leverage graph analysis, population demographics, and environmental factors to predict the impact of future transportation projects. This data comes from a variety of sources, many of which require advanced data processing or data fusion to extract useful features. This project seeks to expand the predictive features of TerraCity's AI models by calculating the availability of parking at the destination of a trip. The availability and cost of parking is one of the key factors that dictates whether or not an individual will choose to drive by car or take public transportation. Unfortunately, a nation-wide parking dataset is not available. This project seeks to leverage satellite imagery to extract the percentage of land that includes both dedicated and on-street parking.

The [National Agriculture Imagery Program \(NAIP\)](#) provides high resolution satellite imagery across the country. This project should take a bounding box of latitude and longitude coordinates as an input, and return the percentage of land that contains on-street and off-street parking. These algorithms will be run offline, and the land use percentages will be stored in TerraCity's database.



The overall approach will be decided by the team and may include feature extraction, object detection, machine learning, manual labeling, and even crowdsourced image labeling if necessary.

Desired Skills

- Experience with Python
- Experience with Computer Vision principles and working with OpenCV
- Experience with Machine Learning and packages such as tensorflow and pytorch

We are open to alternative programming languages, architecture, and frameworks if necessary.

Team Size

We believe this project is suitable for a team of 3-4 students.

Internship Opportunities

TerraCity is not actively pursuing intern candidates at this time, but may be seeking part-time interns in the fall with potential full time positions in 2025.

Intellectual Property

Any intellectual property developed under this project will be assigned to TerraCity LLC.

Location

This project is fully remote.