


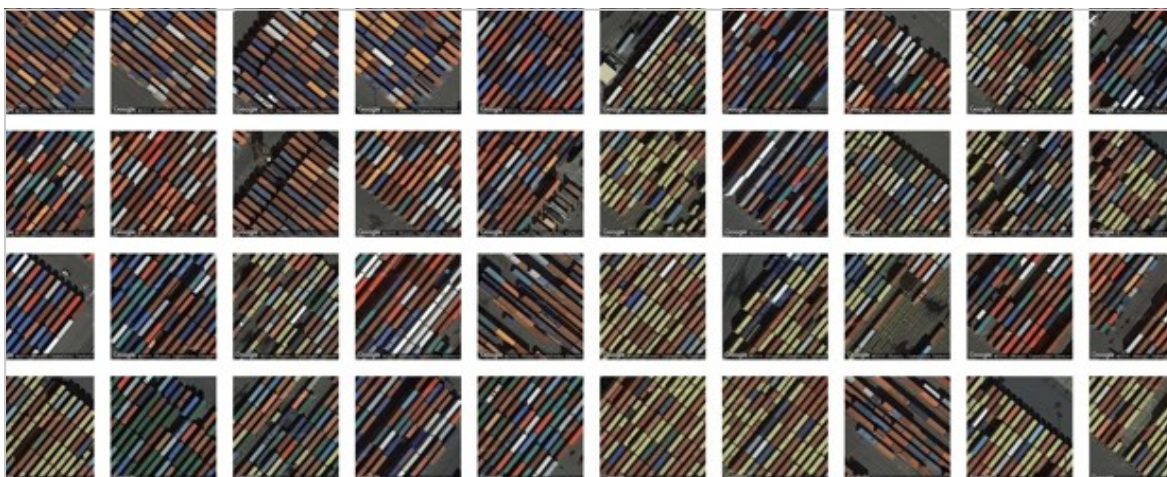


## MAPS

# Mapping the Hidden Patterns of Urban Life

Terrapattern collects visually similar features from satellite images into one searchable platform.

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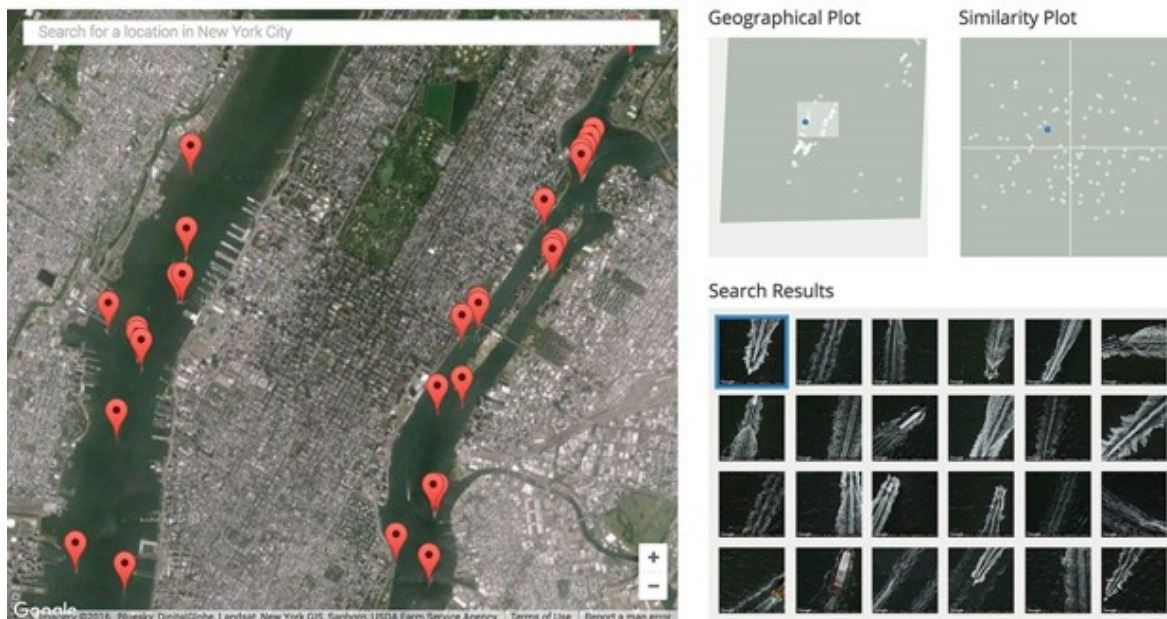
Shipping containers in San Francisco. ([Terrapattern/Flickr](#))

Think about the view from an airplane: the landscape organized into neat tiles of farmland, freeway roundabouts drawn into the earth like children's scribbles, rooftop gardens dotted across the tops of urban skyscrapers. There's a satisfying pattern to it all.

But that bird's-eye view also offers an information-loaded perspective that's now, accessible to the earth-bound. [Terrapattern](#), an open-source prototype project that launched last month, employs satellite imagery to track visually similar occurrences in five cities: Pittsburgh, San Francisco, Detroit, New York, and Berlin. It will soon expand to several more, including Miami and Philadelphia.

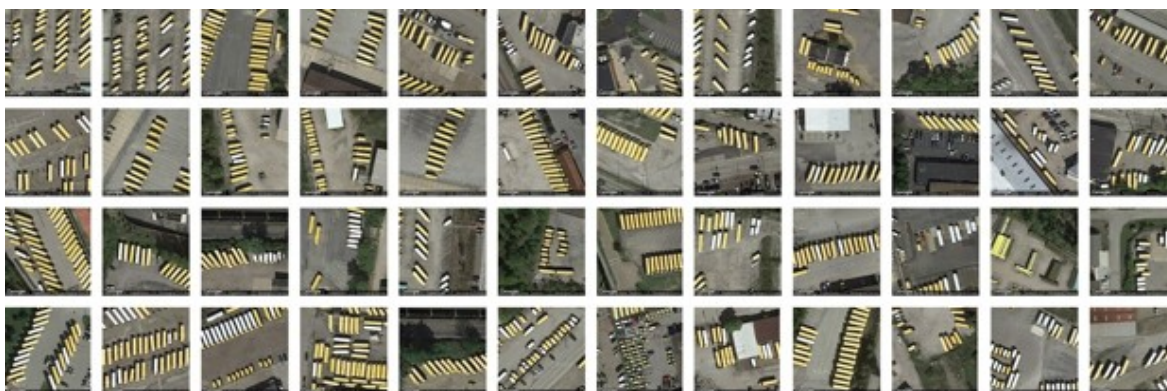
The platform is "an interface for finding '*more like this, please,*' in satellite photos," according to its website. It's more exploration-driven than a

simple image-search engine: you can't just load a map of Detroit, type in "urban gardens," and receive a slew of similar plots. Instead, you can look through the city street views, select a feature of interest—say, a yellow cross-walk in San Francisco—and Terrapattern will offer up the visually similar sites throughout the region.



A search for boat waves in the New York City waters. (Terrapattern/Flickr)

The developers feed the Terrapattern hundreds of thousands of satellite images sourced from OpenStreetMap, teaching the system to learn the visual cues important to identifying a particular place or feature. The platform contains a huge wealth of data—each metro area requires at least 10 gigabytes of RAM for active memory. It synthesizes the patterns into concrete, searchable data points, says the Carnegie Mellon University professor Golin Levin, who along with David Newbury, Kyle McDonald, and students Irene Alvarado, Aman Tiwari, and Manzil Zaheer, developed Terrapattern.



School buses in Pittsburgh. (Terrapattern/Flickr)

Searching the platform is addicting, and there's a whimsical appeal to it: from above, the school buses lined up in Pittsburgh's depots look like rows of chalk.

But this way of mapping, Levin says, may also shed a new light on issues of economic disparity, as well as humanitarian and ecological causes. From above, Levin adds, researchers could track illegal logging roads in rainforests as precursors to deforestation. The tool could also be used in disaster relief efforts to assess the extent of flood or fire damage, for example.

Terrapattern launched on a budget of [less than \\$35,000](#); there is no way, Levin says, that this platform alone could present a searchable view of the entire United States—that would require 2,000 times more computer storage, [Fast Company](#) reported. But the point, Levin says, is “to inspire people's ideas about what's possible.” Several other startups—including the Google-owned [Terra Bella](#)—have sent small imaging satellites into orbit; such tools provide up-to-date pictures of the earth that, when combined with Terrapattern's visual similarity tracking technology, could present a categorical view of intentional and natural land-use changes over time.

Even just the five metro areas currently searchable on Terrapattern show a strangely voyeuristic look into trends in human behavior. The number of [solar panels](#) on New York City roofs is as encouraging as the presence of [fracking wells in Pittsburgh](#) is bleak. “Where there is a regularized way that people treat the world, that will be reflected in the landscape,” Levin says. Never has that been more obvious.