

CASE STUDY: NEARMAP | AI

Growing geospatial applications with quality training data

OVERVIEW

Nearmap turned to CloudFactory to take over its data labeling function and scale operations. The CloudFactory team has labeled thousands of aerial images to help Nearmap provide data-rich virtual tours across rooftops, buildings, and other location features.

Services Used

+ Computer Vision Managed Workforce



Web
nearmap.com



Industry
Geospatial



Headquarters
Sydney, Australia



Company Size
350+

MEET OUR CLIENT

Cityscapes may not be the first thing that comes to mind when you think of artificial intelligence (AI), but aerial image recognition software is transforming the way location content is harvested and processed.

Nearmap, a global technology pioneer, provides easy and instant access to up-to-date and historic geospatial data to its customers. It uses proprietary technology to capture high-resolution aerial imagery of urban exteriors, providing data-rich virtual tours across rooftops, buildings, and other location features, all at a massive scale. This year, the company's AI team added another layer of data to their traditional product offering: an automated insight-gathering software that can identify things such as the shape or material of a roof.

The accuracy of Nearmap's AI product relies on correct data labeling on a large scale. A long-term partnership with CloudFactory has removed the data annotation challenge, leaving the Nearmap team to focus on its core functions: innovating and growing operations.

THEIR CHALLENGE

The first among aerial imagery providers, Nearmap offers both AI analysis and high-definition aerial images with accuracy on a commercial scale. Its geospatial data can help speed up and simplify many organizations' workflows, from insurance underwriting to property appraisals, by processing virtual location data without the need for in-person inspections.

Automating AI data sets requires up-to-date information and labor-intensive data labeling. When an AI component was first introduced to Nearmap's offering, data labeling was done in-house, distracting the team from developing software. The Nearmap team quickly realized that to expand the business, they would need outside help.

"It's not a practical or good use of our data scientists' time to be also doing the labeling, and so that's where the relationship with CloudFactory started," said Peter Rickwood, a Senior Data Scientist at Nearmap.

In addition to the sheer volume of images that need processing, a key challenge is the variety of imagery assets, and the different ways they

STATS

300K⁺

HOURS OF ANNOTATION
WORK COMPLETED

3+

YEAR PARTNERSHIP
WITH CLOUDFACTORY

10x

INCREASE IN MONTHLY
WORK DELIVERED

THEIR CHALLENGE CONTINUED...

must be labeled. Nearmap had to develop an in-house labeling tool, as no commercial tool exists that could meet their imaging requirements, which change frequently.

Business growth meant finding a reliable partner that understood the complexities of what was required, could learn and work with the proprietary tooling, and ensured fast delivery of high-quality labeling work.

OUR SOLUTION

CloudFactory took over the Nearmap data labeling function, quickly onboarding additional team members as needed so the Nearmap team could begin to scale up operations.

"One of the key factors that influenced our decision to partner with CloudFactory was quality. Everything I knew about crowdsourced labeling was that you have to very carefully gamify your solutions, because the labelers are just understandably trying to maximize their reward, with as little effort as possible. With a trained team, you get something you simply can't with crowdsourcing—accountability. In retrospect, this has had a huge impact for us, because the biggest limiting factor on the performance of the models is actually the quality of the labels, and how precise the definitions are. Discussing endless corner cases on a weekly basis with the team, and how they are to be treated, is hugely important," said Michael Bewley, Senior Director of AI Systems at Nearmap.

It's a relationship that has gone from strength to strength in the three and a half years since the two companies began working together. The partnership started at just 200 hours of work per month and has grown 1 to 2 orders of magnitude above that in the time since. Working with CloudFactory means those additional hours have made a positive impact on the communities where the work is completed; a fact that appeals to clients like Nearmap.

"With a trained team, you get something you simply can't with crowdsourcing—accountability. In retrospect, this has had a huge impact for us, because the biggest limiting factor on the performance of the models is actually the quality of the labels, and how precise the definitions are."

— Michael Bewley
Nearmap Senior Director of AI Systems

"Having sent our team members to visit CloudFactory in Nepal, Kenya, and Durham, NC, I was glad to find that the vision is held in practice, as well as intent," explains Bewley.

OUR SOLUTION CONTINUED...

Ongoing training, quality reviews, and an understanding of changing client needs gives the Nearmap team confidence their decision to hand the data labeling function to CloudFactory was a sound business move.

“CloudFactory helps with everything we do because it all relies on labeled data. So, in that sense CloudFactory is the first step in everything we do,” said Rickwood.

THE RESULTS

CloudFactory has delivered 300,000+ hours of annotation work to Nearmap over the last three years. The vast and diverse bank of labeled images gives Nearmap a strong competitive advantage.

“It’s not just the size of the data set, it’s the number of times we’ve gone over it again and again, comparing humans against humans, and humans against models, to clean up all the errors we can, to make it as perfect and pristine as possible. That’s not just about money, it takes time and iteration to build an asset like that,” says Bewley.

Expanding and improving the data set is a key roadmap goal for Nearmap, and CloudFactory is an integral part of achieving it. It’s such a successful partnership that Nearmap has expanded the relationship to include support for its new roof-geometry products.

“Cloudfactory’s labeling work allows our models to recognize more and more things,” said Rickwood. “It’s been really important for us to have that continual relationship because it would be too difficult to cold start on new projects. And because we have that long-running relationship, the team is able to tag different types of imagery in different ways quite easily which expands the ways we can grow and innovate for our customers.”