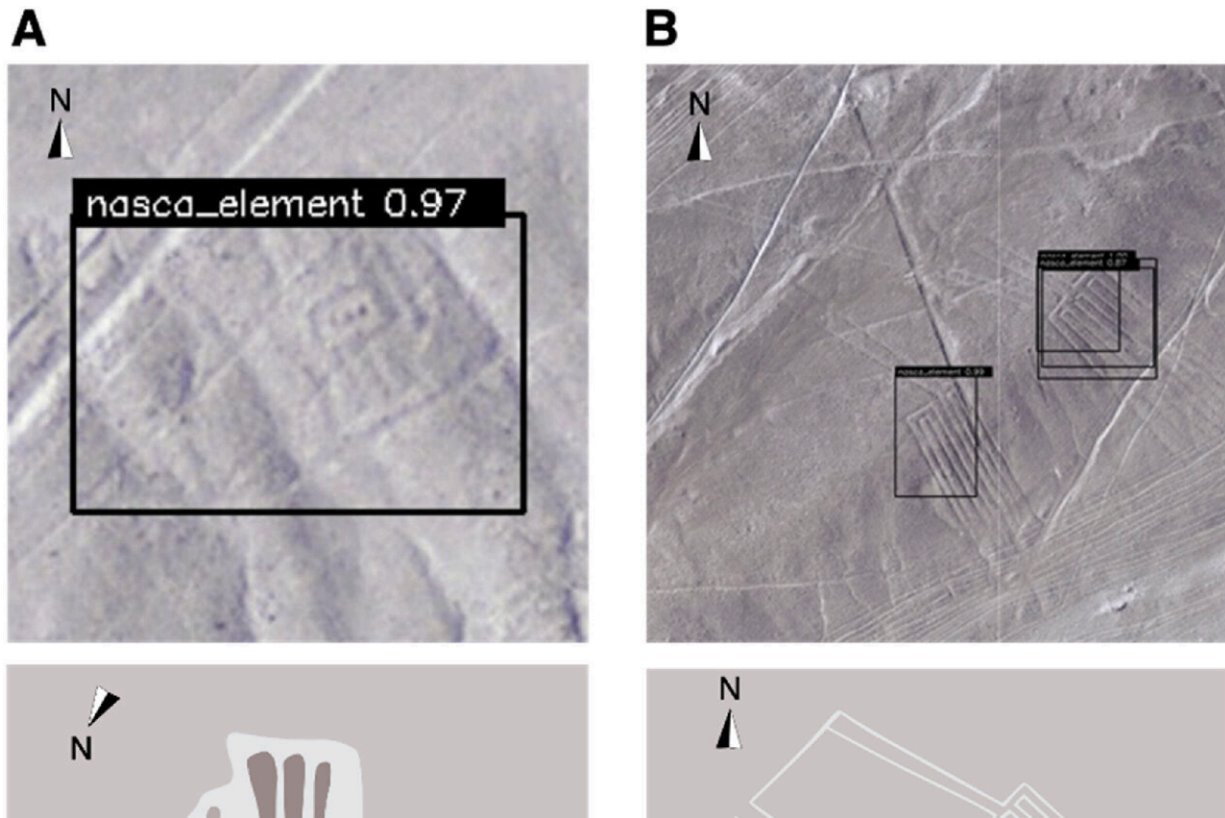


# Using AI apps to find Nasca geoglyphs

June 13 2023, by Bob Yirka



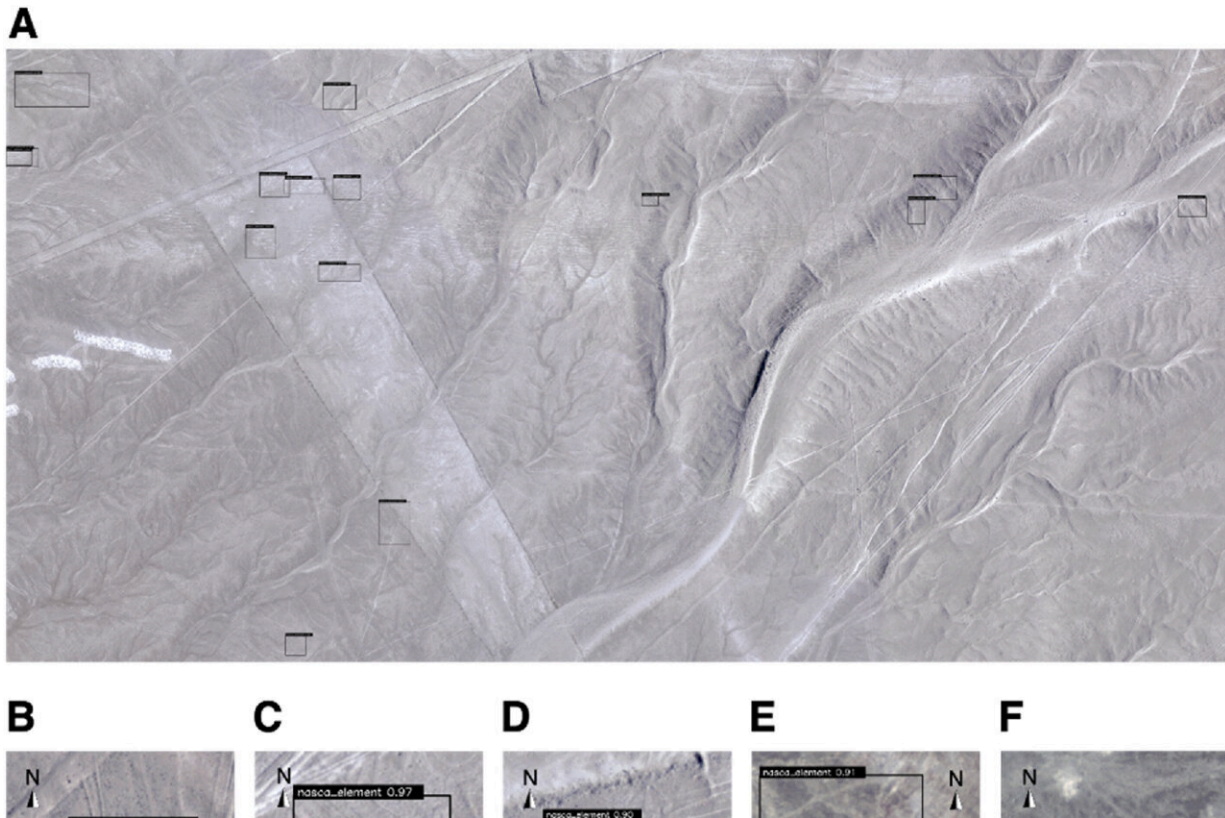
Four new Nasca geoglyphs identified by Deep Learning. (A) A humanoid, relief-type. (B) A pair of legs, line-type. (C) A fish, relief-type. (D) A bird, line-type. (B to D) are presented to the public for the first time in this paper. Credit: *Journal of Archaeological Science* (2023). DOI: 10.1016/j.jas.2023.105777

A team of archaeologists from Yamagata University, IBM Japan and Université Paris 1 Panthéon-Sorbonne used an artificial intelligence

application to locate previously unknown Nasca geoglyphs. In their study, reported in *Journal of Archaeological Science*, the group used a variety of data sources to teach an AI app.

The Nasca geoglyphs are famous across the globe for their [massive scale](#)—the images were created by ancient people making depressions in the desert floor and are only fully appreciated from an aircraft. They were made in a high, arid plateau that stretches for approximately 80 km in one direction and 400 km in another.

Since their [rediscovery](#) by Spanish explorers, the geoglyphs have inspired many research efforts. Some have involved attempts to understand their meaning and why they were made, while others have simply tried to find all of them. It is not known how many were created, so archaeologists and historians continue to look for more. In this new effort, the research team used [artificial intelligence](#) to help with the search.



Inference results of aerial photographs. (A) Examples of inference result of aerial photographs. This is part of aerial photographs used for testing that are within the Northern part of Nasca Pampa (400 m × 800 m). (B to L) The inference results of the DL model. (B to F) Detected test data. (G to H) Undetected test data. (I to L) Over-detected items. Credit: *Journal of Archaeological Science* (2023). DOI: 10.1016/j.jas.2023.105777

The team noted that a large amount of data has been collected regarding the region where the geoglyphs exist—among that collection are photographs taken from planes, drones and satellite, along with LiDAR. Most helpful were [aerial photographs](#) that map the entire region at a resolution of 0.1 meter per pixel.

The team trained an AI application on geoglyph data, and then set it to

work searching for new geoglyphs in the detailed photographs. They found four new geoglyphs: one that looks like a human holding a club, a pair of legs, a bird and a fish. The human geoglyph was five meters in length. The fish was 19 meters, the bird 17 meters, and the pair of legs 78 meters.

The researchers suggest that their approach can be refined to aid in finding more geoglyphs in the region and modified for use in other archaeological image searching applications.

**More information:** Masato Sakai et al, Accelerating the discovery of new Nasca geoglyphs using deep learning, *Journal of Archaeological Science* (2023). [DOI: 10.1016/j.jas.2023.105777](https://doi.org/10.1016/j.jas.2023.105777)

© 2023 Science X Network

Citation: Using AI apps to find Nasca geoglyphs (2023, June 13) retrieved 28 April 2024 from <https://phys.org/news/2023-06-ai-apps-nasca-geoglyphs.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.