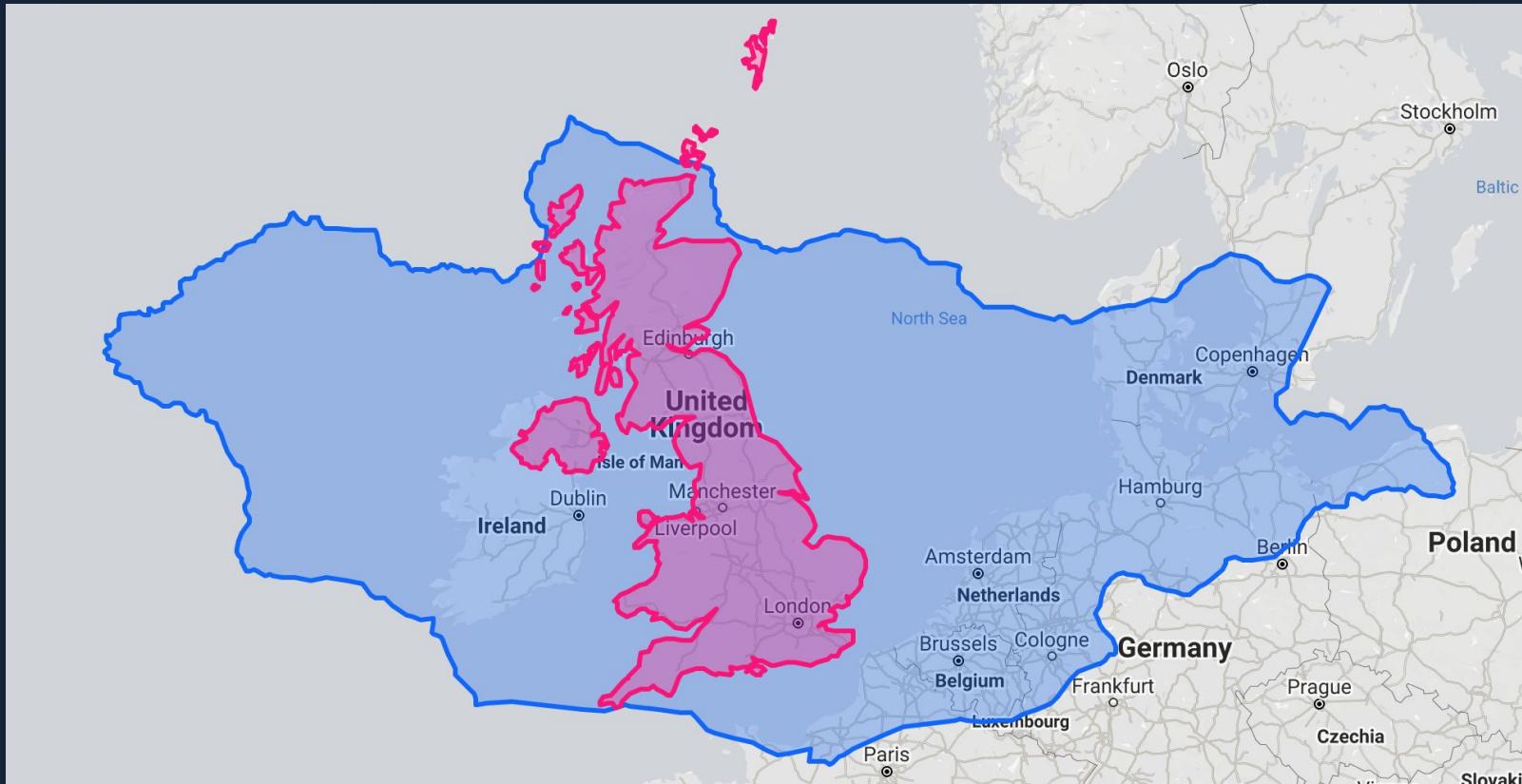




# Archaeology & Machine Learning

March 2020 | Mina Jambajantsan

# Comparison map



**UK**

**94,000 sq mi**

**67,500,000**

**700 p/sq mile**

**Mongolia**

Territory

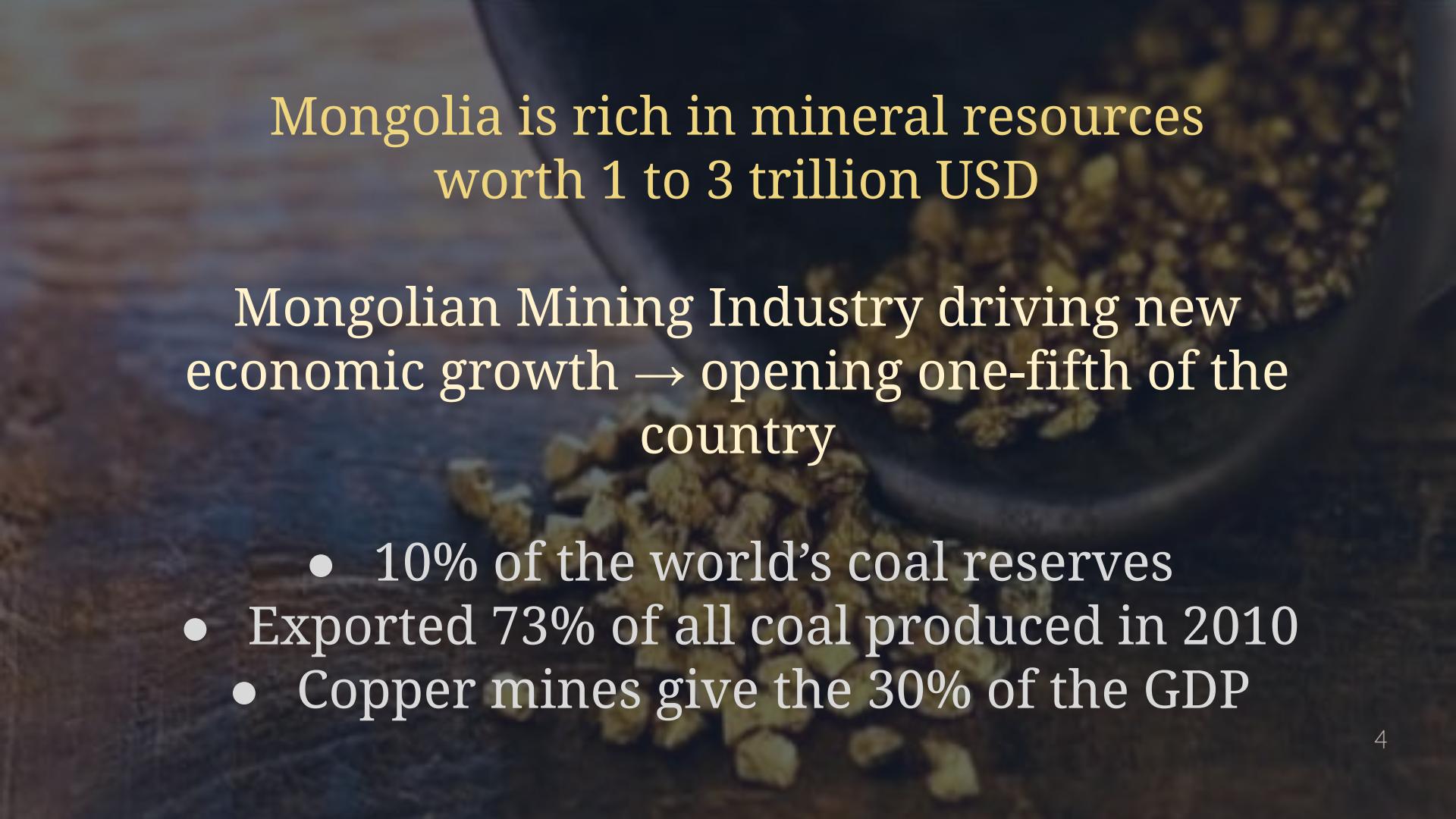
**605,000 sq mi**

Population

**3,300,000**

Density

**5 p/sq mile**



Mongolia is rich in mineral resources  
worth 1 to 3 trillion USD

Mongolian Mining Industry driving new  
economic growth → opening one-fifth of the  
country

- 10% of the world's coal reserves
- Exported 73% of all coal produced in 2010
- Copper mines give the 30% of the GDP

## Mongolia GDP From Mining

[Summary](#)[Forecast](#)[Stats](#)[Download ▾](#)

3Y

10Y

25Y

MAX

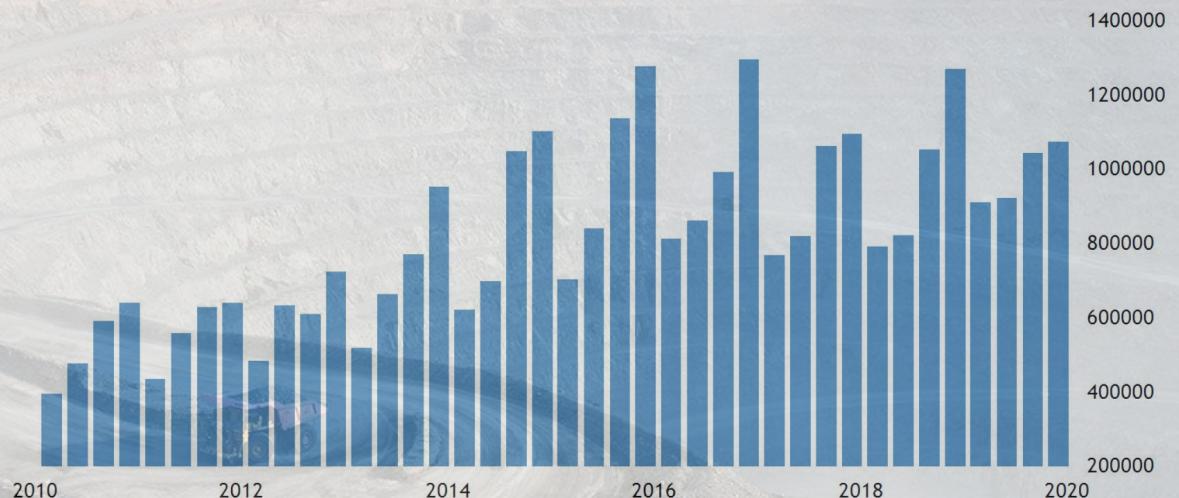
Chart

Compare

Export

API

Embed



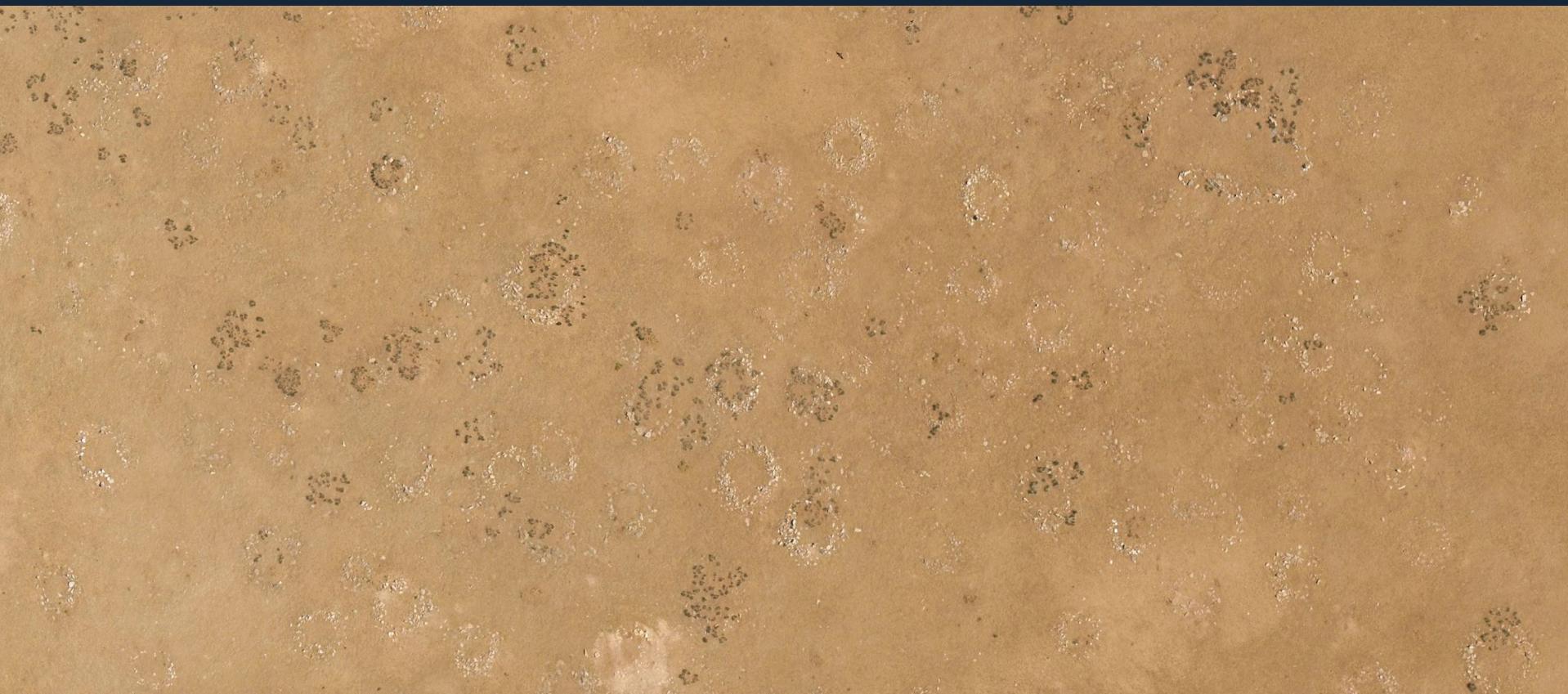
SOURCE: TRADINGECONOMICS.COM | NATIONAL STATISTICAL OFFICE OF MONGOLIA



# View of the burials from the ground



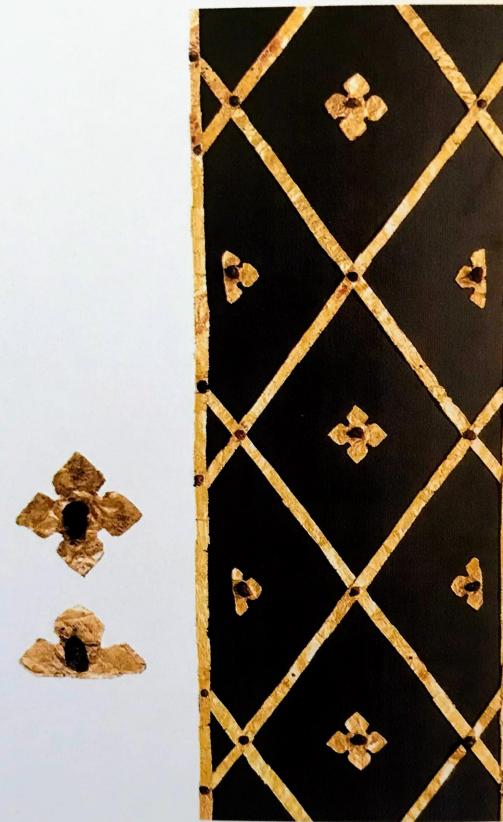
View of the burials from 300 feet

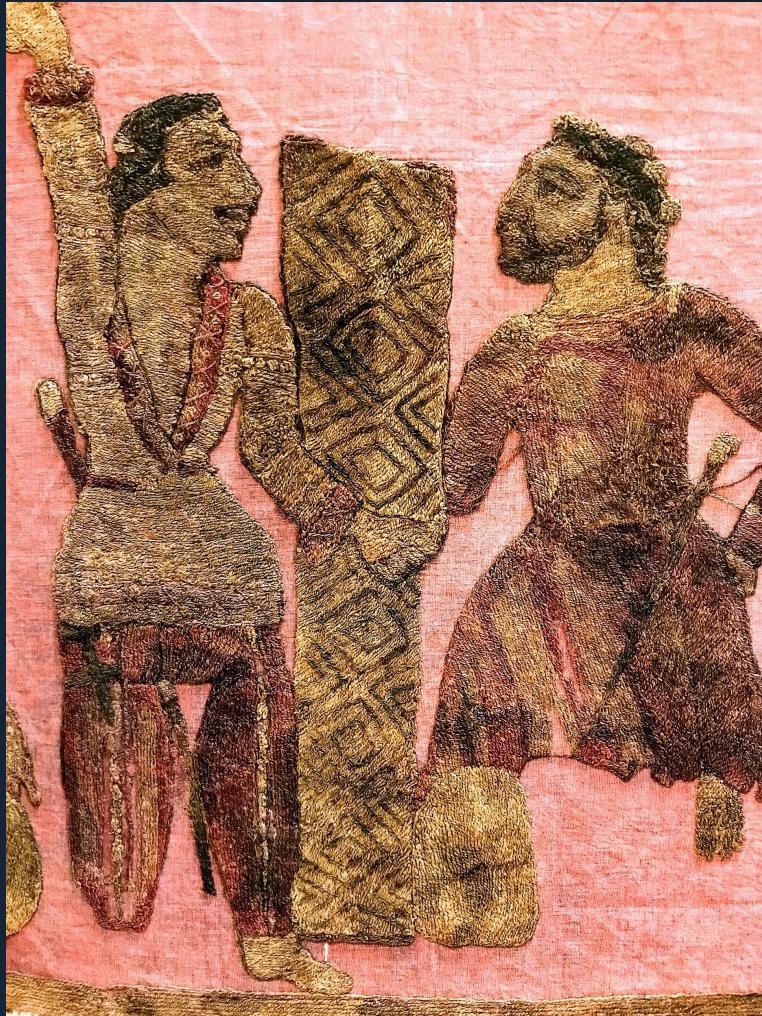




# Noin-Ula Burial site for Xiongnu aristocracy (13 AD)





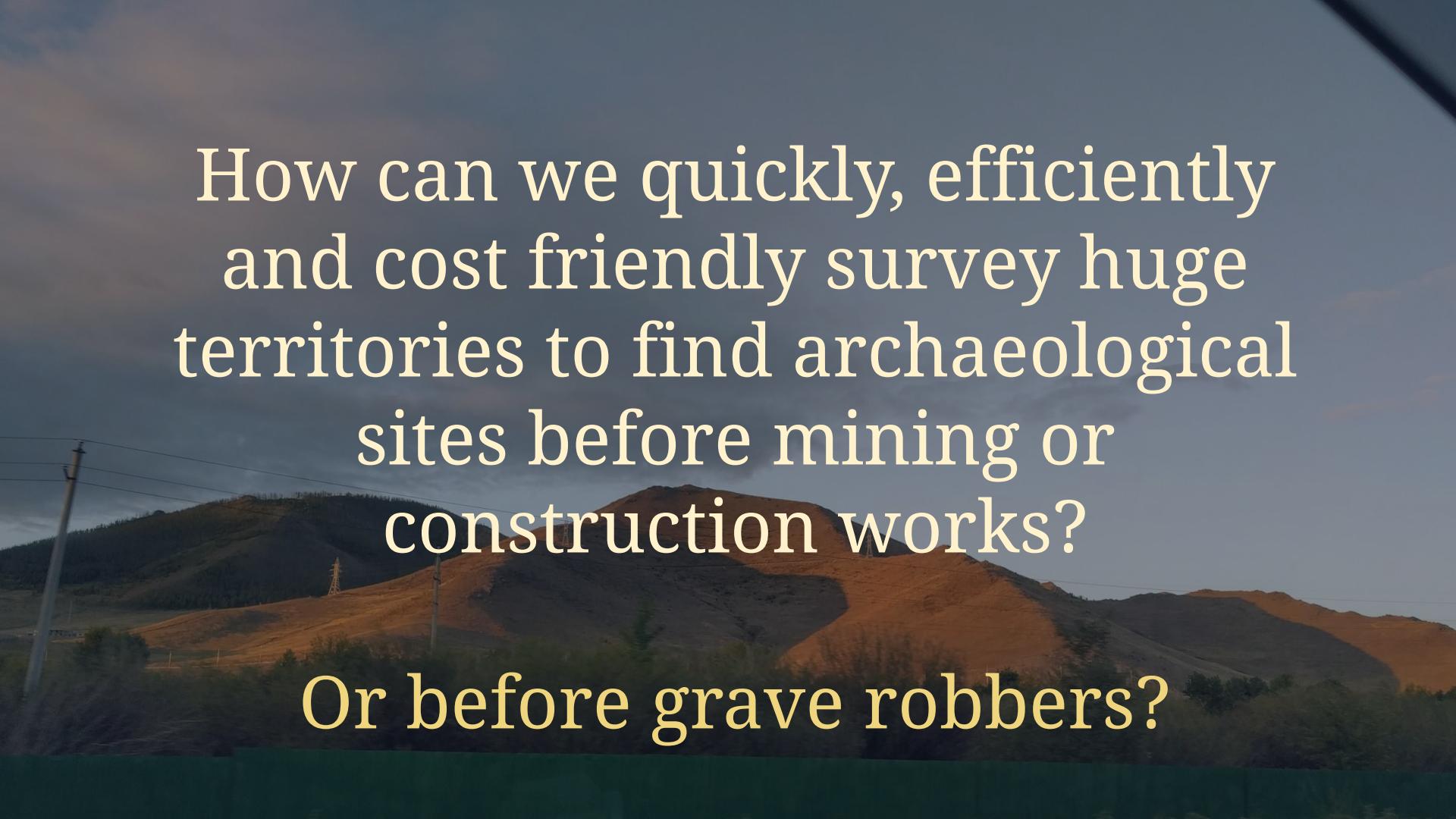


160.

Балгыт герөөсийн дүрт мөнгөн чимэг.  
Архангай аймаг, Хайрхан сум, Гол мод, Булш 20  
Silver breast collar decoration with unicorn image.  
Tomb 20, Gol mod, Khairkhan soum, Arkhangai aimag

159.

Балгыт герөөсийн дүрт мөнгөн чимэг.  
Архангай аймаг, Хайрхан сум, Гол мод, Булш 20  
Silver breast collar decoration with unicorn image.  
Tomb 20, Gol mod, Khairkhan soum, Arkhangai aimag



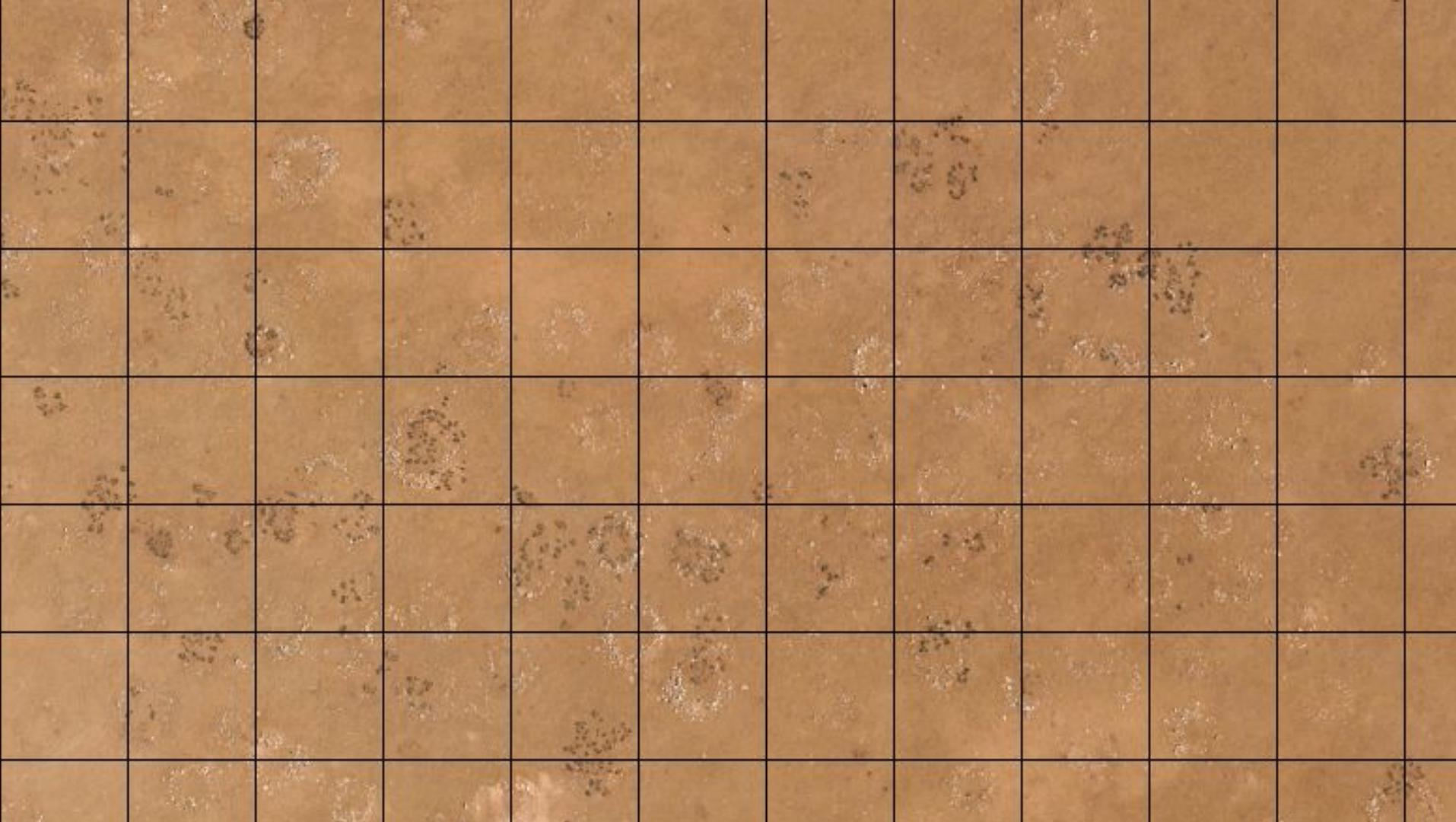
How can we quickly, efficiently  
and cost friendly survey huge  
territories to find archaeological  
sites before mining or  
construction works?

Or before grave robbers?

1 hour Drone flight

550 Raw Drone Images

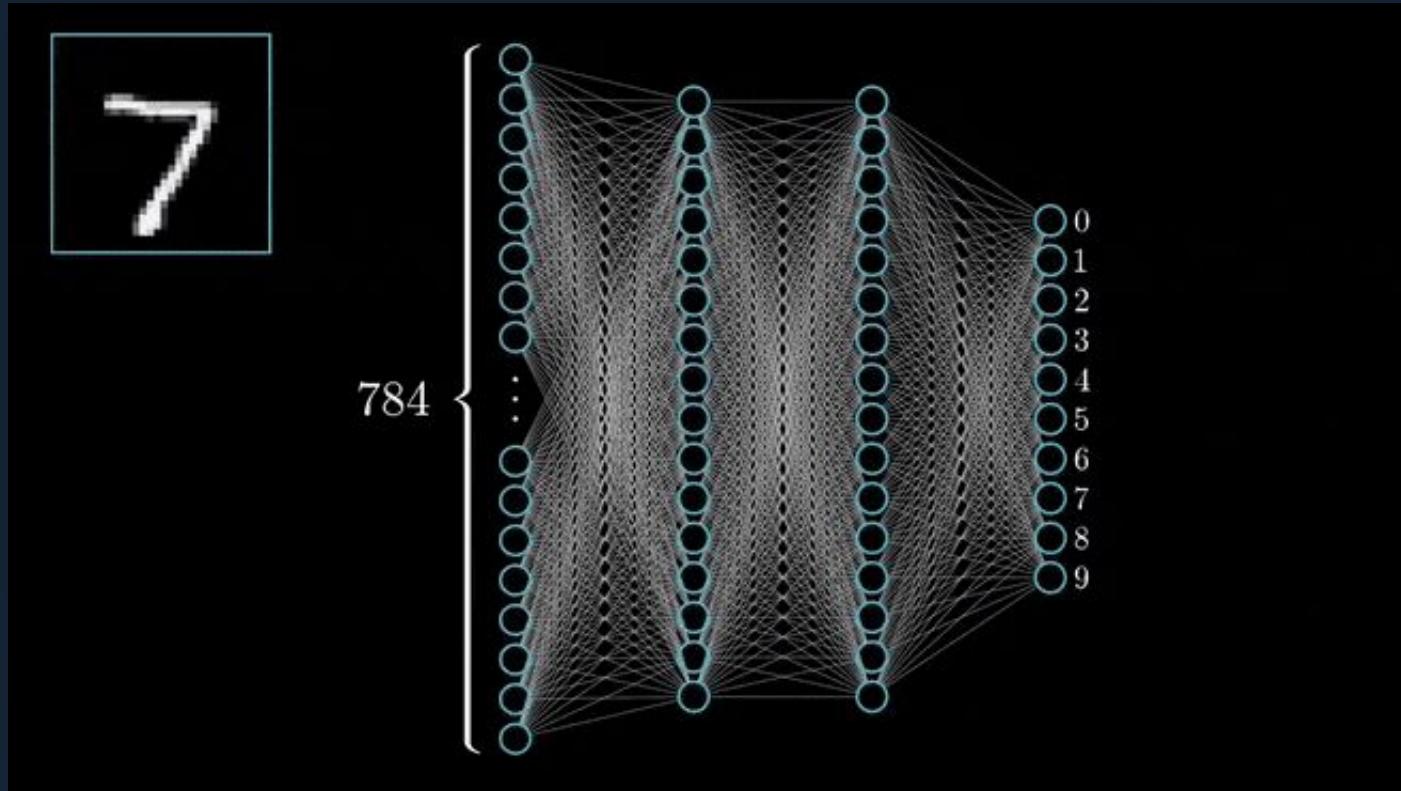
11 000 Images to process



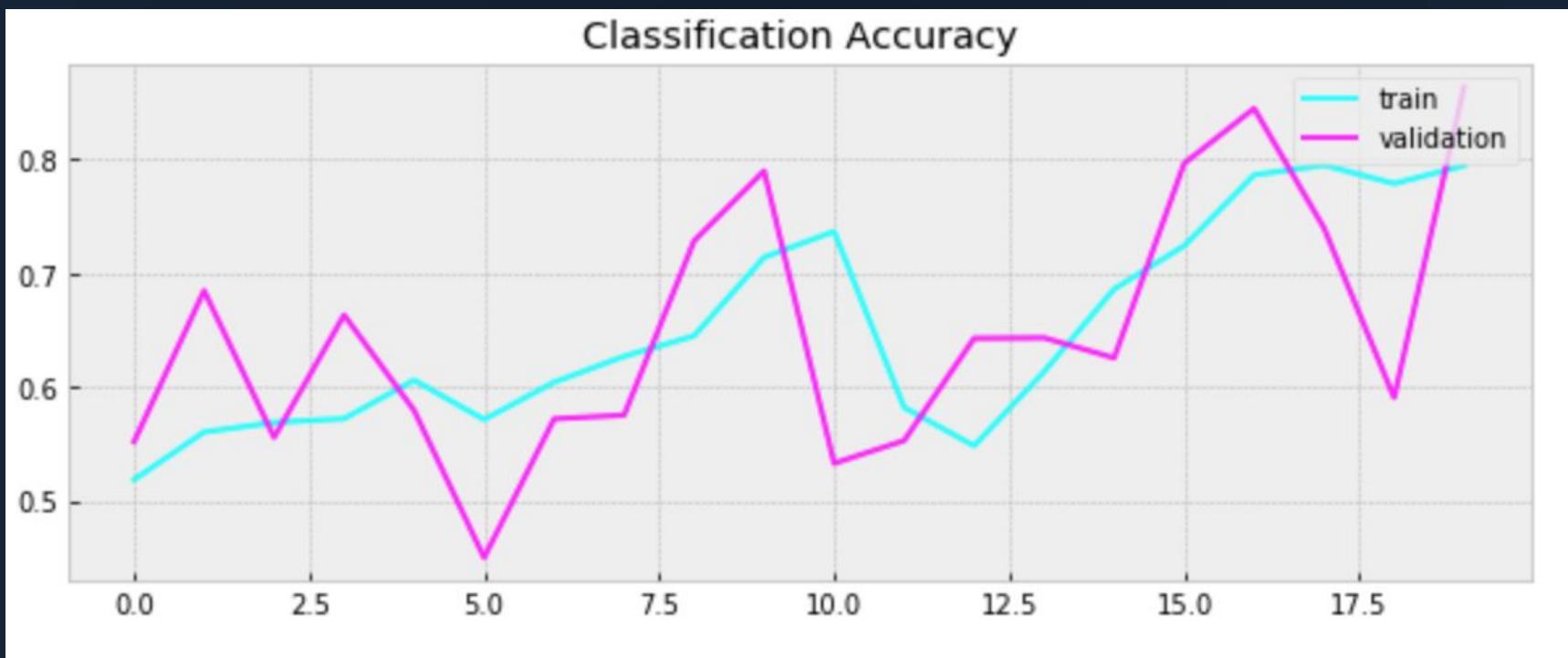
1 raw photo sliced in 20 squares



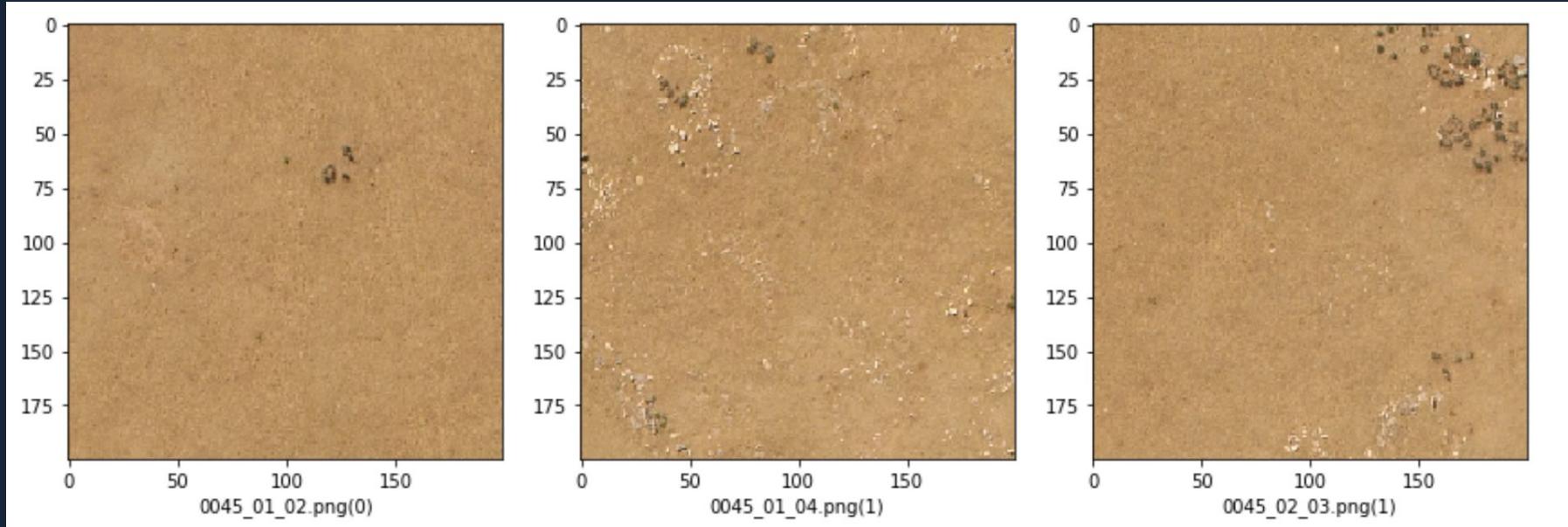
# Deep Neural Network



# 88% Accuracy



# Result





My Model:

Helps preserve  
Archaeological sites

Cost efficient

Applicable on large  
terrain areas

# Future plans

1. Count the burials
2. Measure the burials
3. Show location on map
4. Use this model on

Satellite Photos

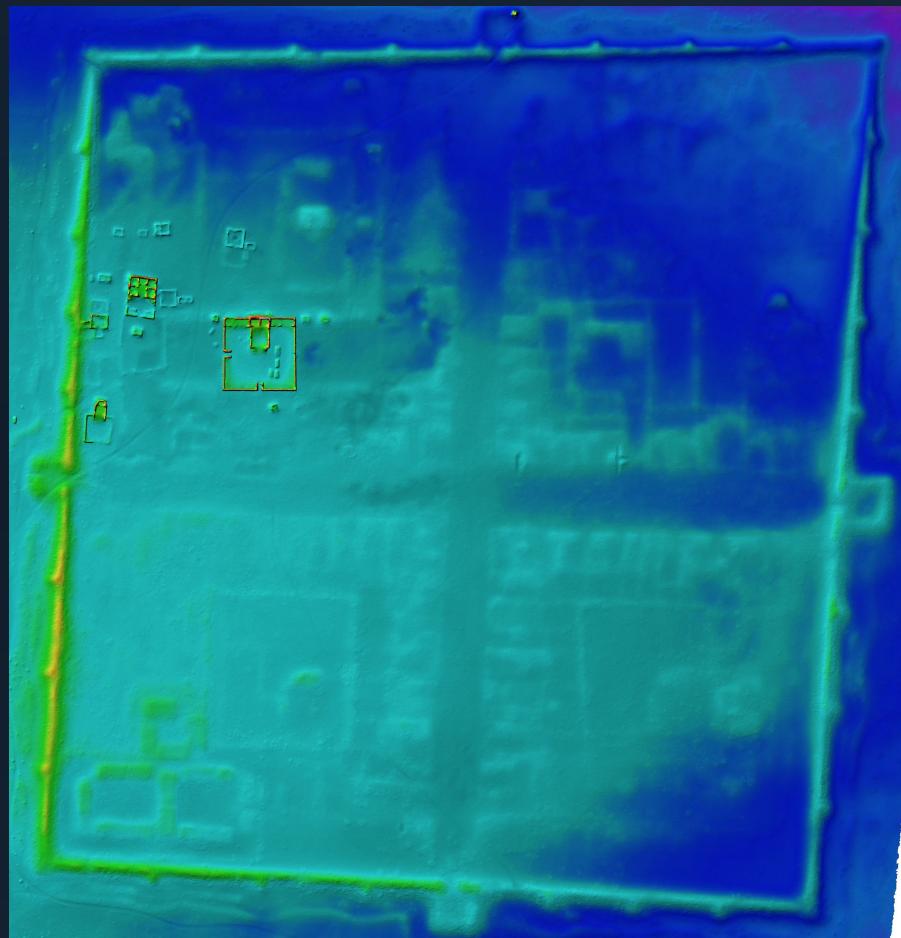




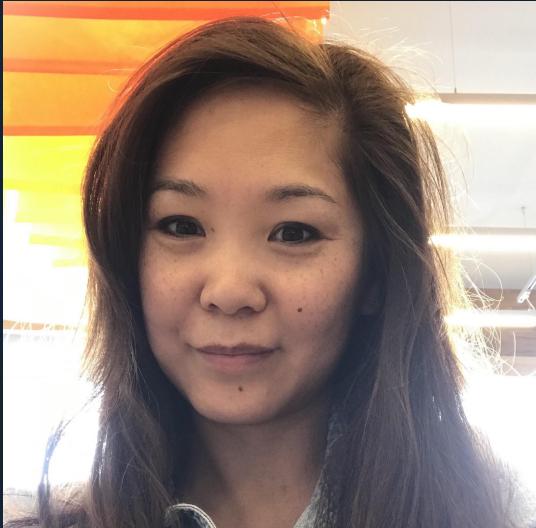
THANK YOU

A large, white, sans-serif font displays the words "Thank you" in the center of the frame. The background is a vast, dry, brown field. Scattered across the field are numerous small, white stones or pieces of debris, which have been arranged to spell out the word "THANK YOU". The lighting suggests it's either sunrise or sunset, casting long shadows of the text onto the ground.

Thank you



# About me:



Mina  
Jambajantsan  
mina@mina.hu



<https://www.linkedin.com/in/mina-jambajantsan-3b991836/>