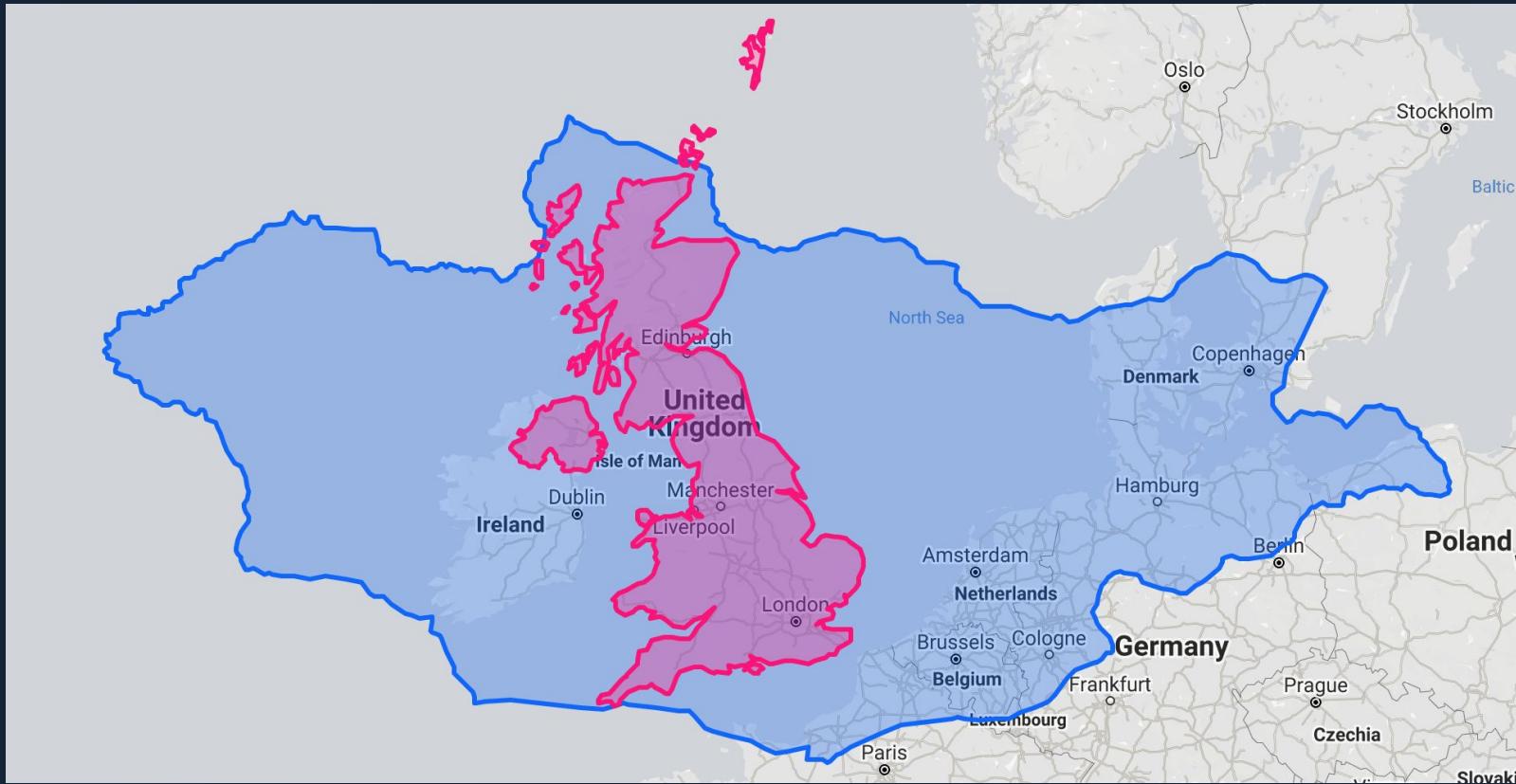




# Archaeology & Machine Learning

March 2020 | Mina Jambajantsan

# Comparison map



**UK**

**94,000 sq mi**

**67,500,000**

**700 p/sq mile**

**Mongolia**

Territory

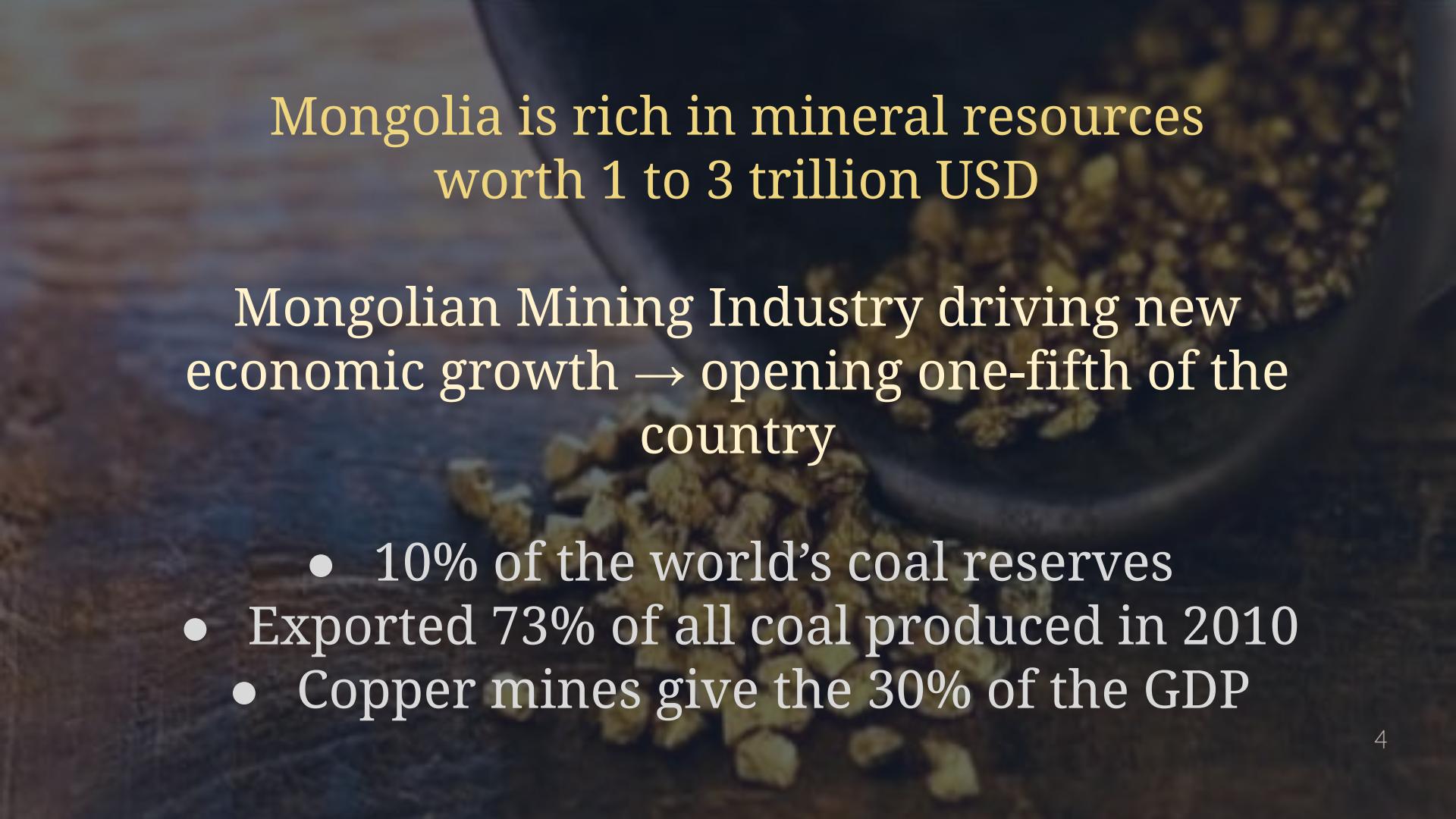
**605,000 sq mi**

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

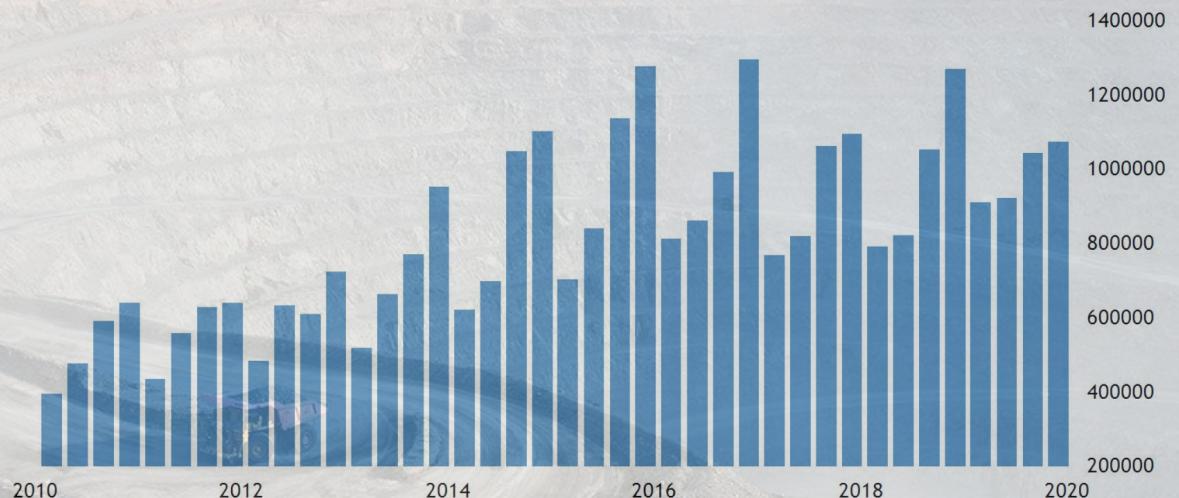
Chart

Compare

Export

API

Embed



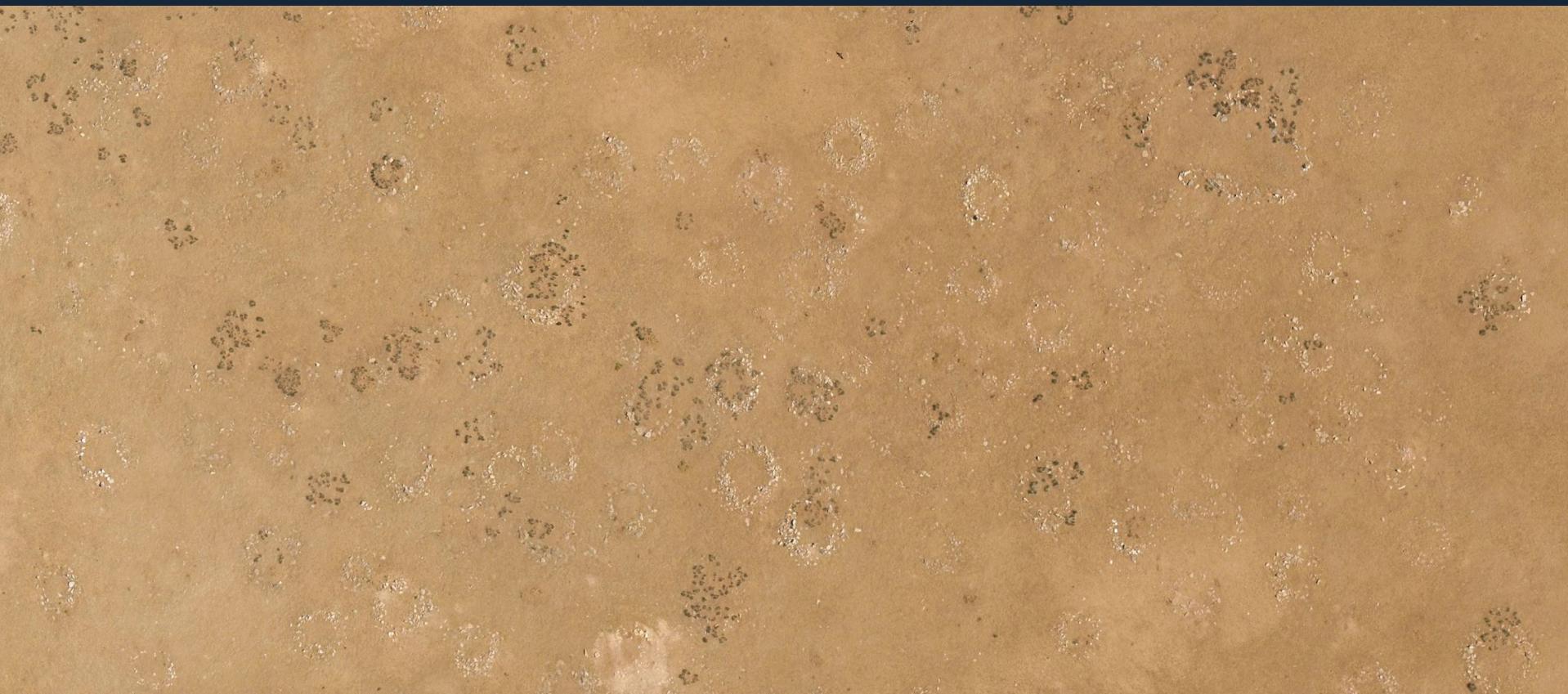
SOURCE: TRADINGECONOMICS.COM | NATIONAL STATISTICAL OFFICE OF MONGOLIA



# View of the burials from the ground



View of the burials from 300 feet





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





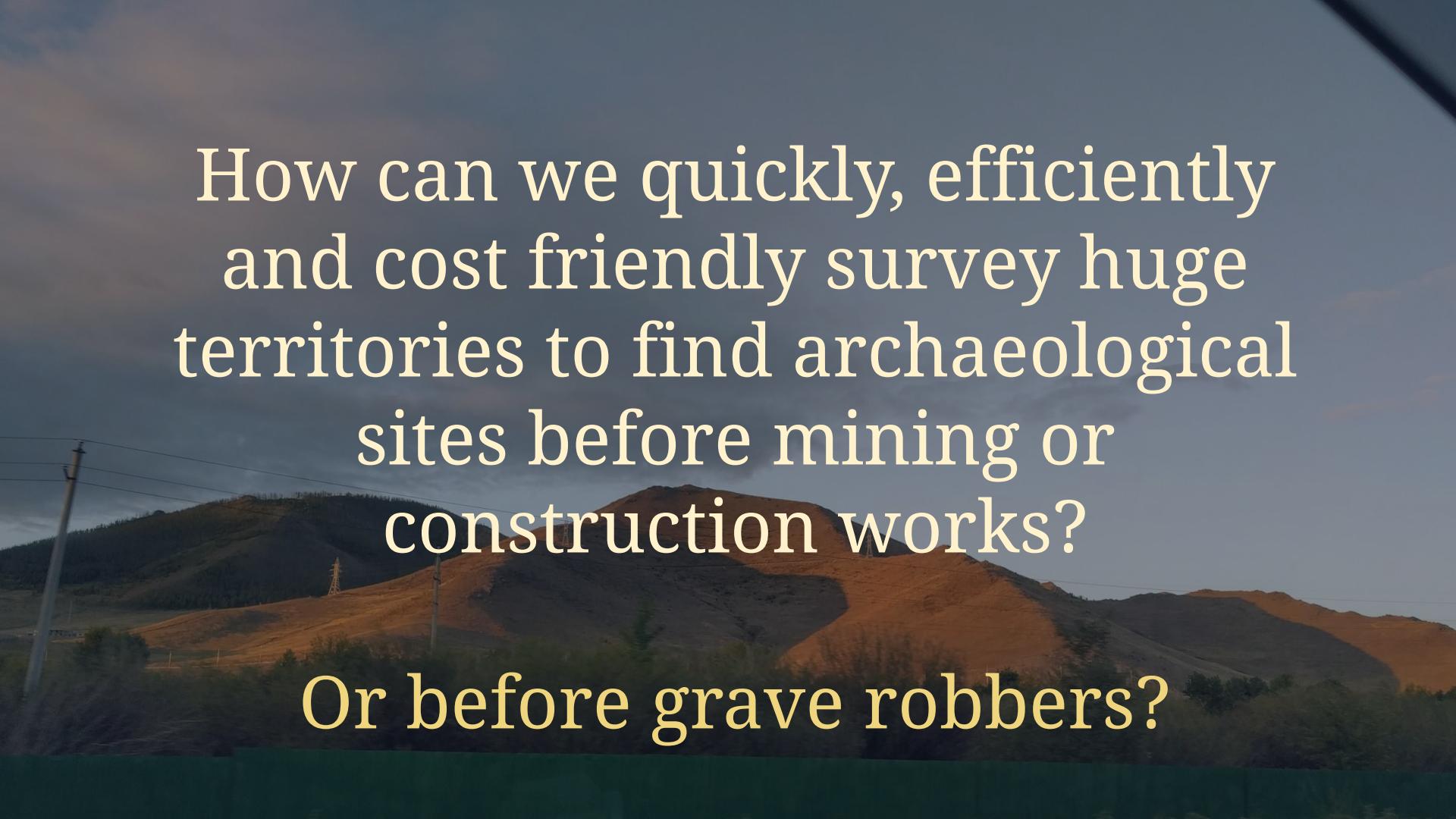


160.

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



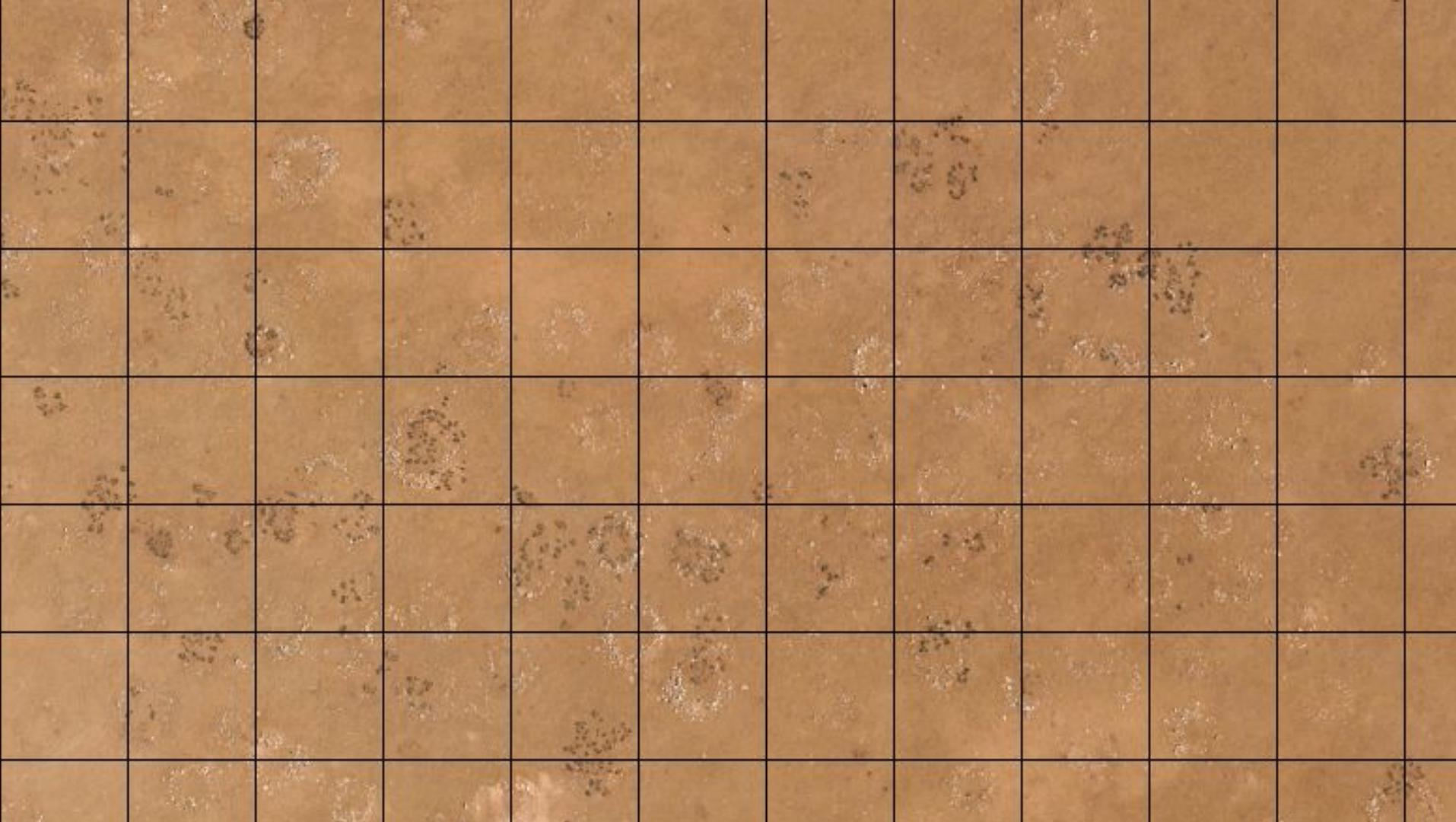
How can we quickly, efficiently  
and cost friendly survey huge  
territories to find archaeological  
sites before mining or  
construction works?

Or before grave robbers?

1 hour Drone flight

550 Raw Drone Images

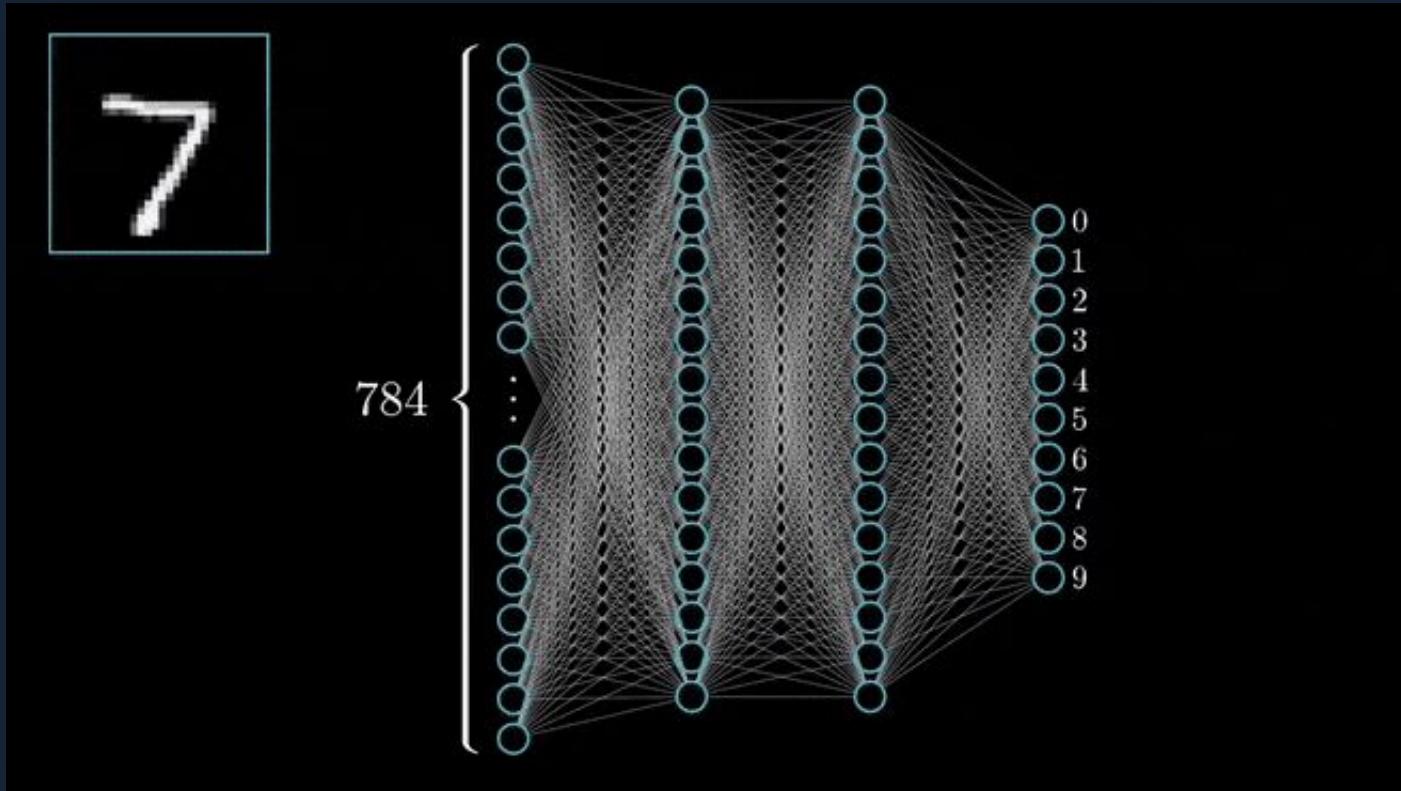
11 000 Images to process



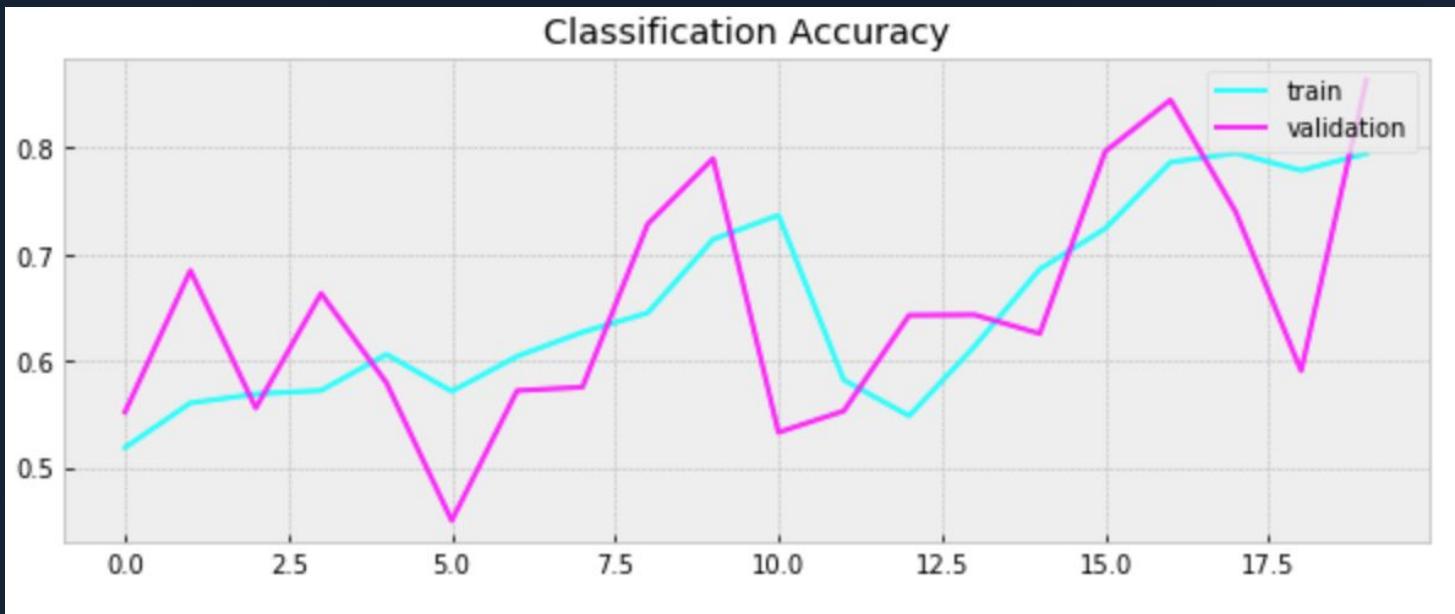
1 raw photo sliced in 20 squares



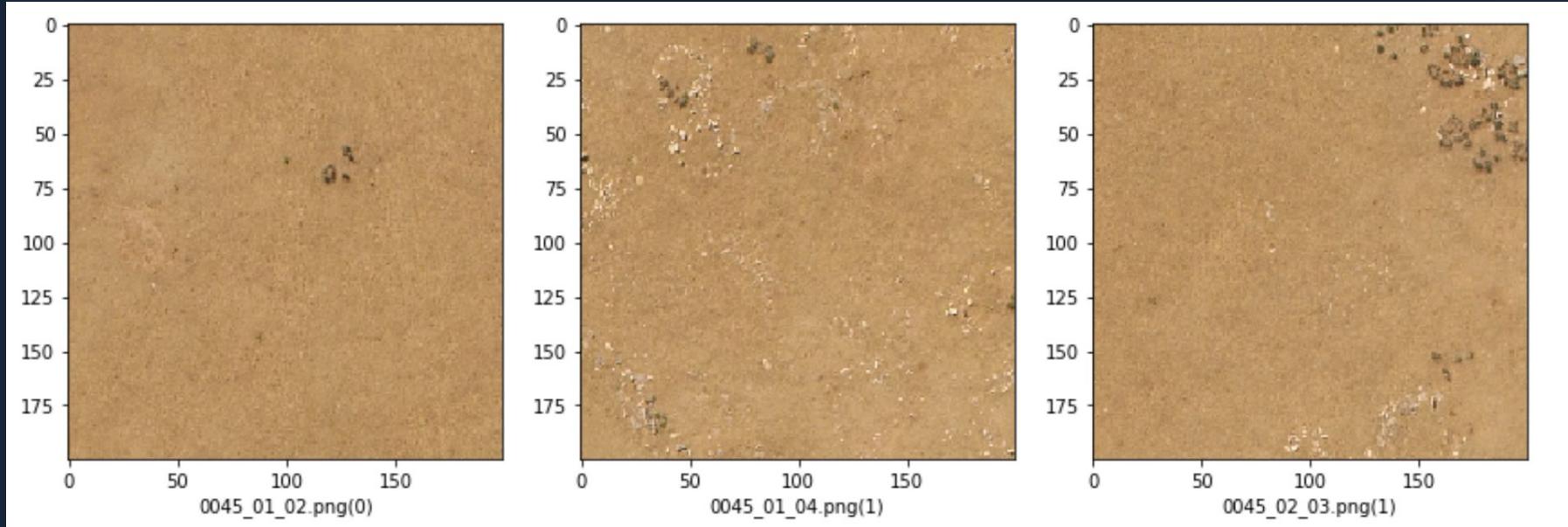
# Deep Neural Network



# 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

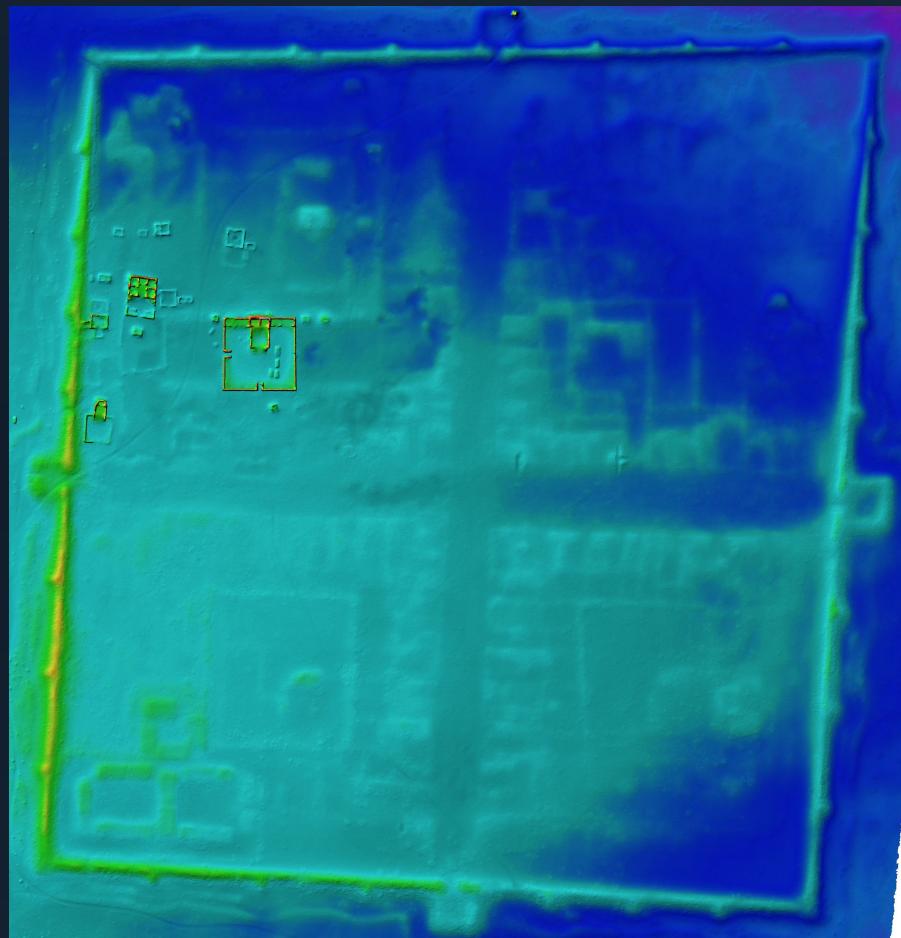




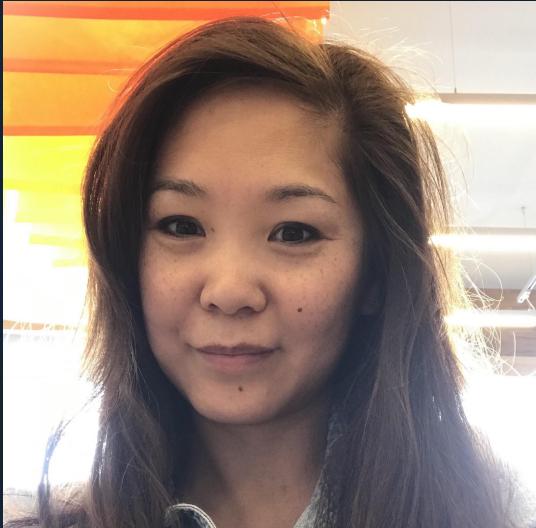
THANK YOU

A large, bold, white text "THANK YOU" is overlaid on an aerial photograph of a field. The field is covered in dry, brown grass and scattered with numerous small, white stones. These stones are arranged in a way that spells out the words "THANK" and "YOU". The "T" and "H" are on the left, "A" and "N" are in the middle, and "K" and "U" are on the right. The "Y" and "O" are at the bottom right. A single person stands at the bottom right corner of the field, looking up at the text. The sun is low, 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/>