PROJECT TITLE :
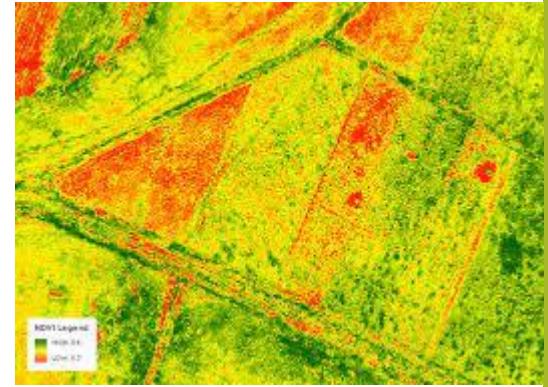# USING SATELLITE DATA FOR AGRICULTURE INDUSTRY APPLICATION TO FIGHT AGAINST FOOD SHORTAGE

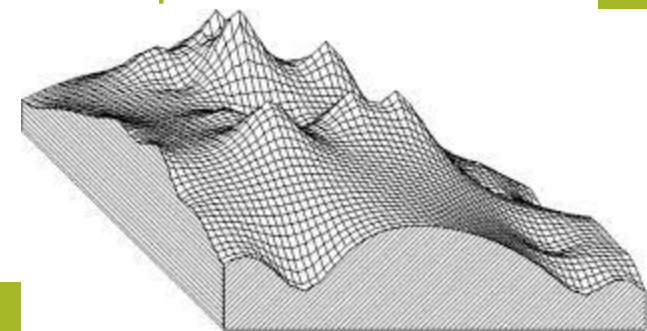Proposed by Akanksha Som

The objectives of your project

- The main objective of the project was to produce applicable products based on satellite imagery for the farmlands.

- We have successfully managed to produce two different products based on satellite imagery and present them as web-based services in an OGC-standard manner. We used pytorch(Deep learning) in the process.

- These two product are : NDVI + Elevation model

- This path could potentially continue in the future. For instance, we could further extend this service to be available for mobile devices.

The objectives of your project

- NDVI : Healthy vegetation reflects more NIR and absorbs more red light. By calculating NDVI, we can assess the overall health and vitality of vegetation. Unhealthy or stressed vegetation will have lower NDVI values, indicating potential issues.

- Elevation model : Elevation models help determine the slope of the land. Different crops have varying water requirements, and understanding the slope of the terrain helps in designing irrigation systems that prevent water runoff or accumulation in low-lying areas.(although we only produced elevation models and still slope products have not been produced)

The description of how using tools and data within cloud environments helped you to achieve your goals

- Data in the cloud : Up42 offers really great opportunities for every person who want to process commercial satellite data. I used Spot-6/7 imagery and Up42 placed my required data in the cloud storage. It was really a fantastic experience to me!

- Tools in the cloud : here Up42 again provide the possibility to deploy the algorithm as a container. It is really great and flexible. But there were also subtle limitation which didn't let me progress my whole workflow in the cloud. These limitations were classified in two categories for me : 1- k8s scheduler, 2- the requirements for processing stereo imagery

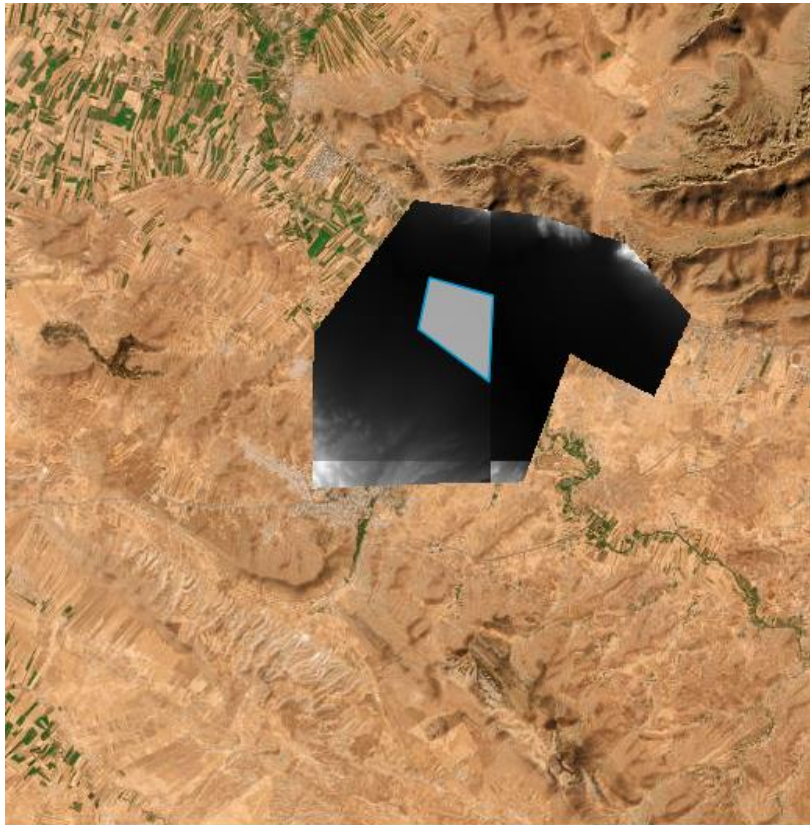# The highlights of any benefits to society derived from your project

- Definitely the elevation product was useful for industry and will effect on the services the people would receive in the future, hopefully.

- we produced a system just as a not mature MVP. But if our product be developed more in terms of visual presentation of the products, it will be possible to be used by farmers in the future.
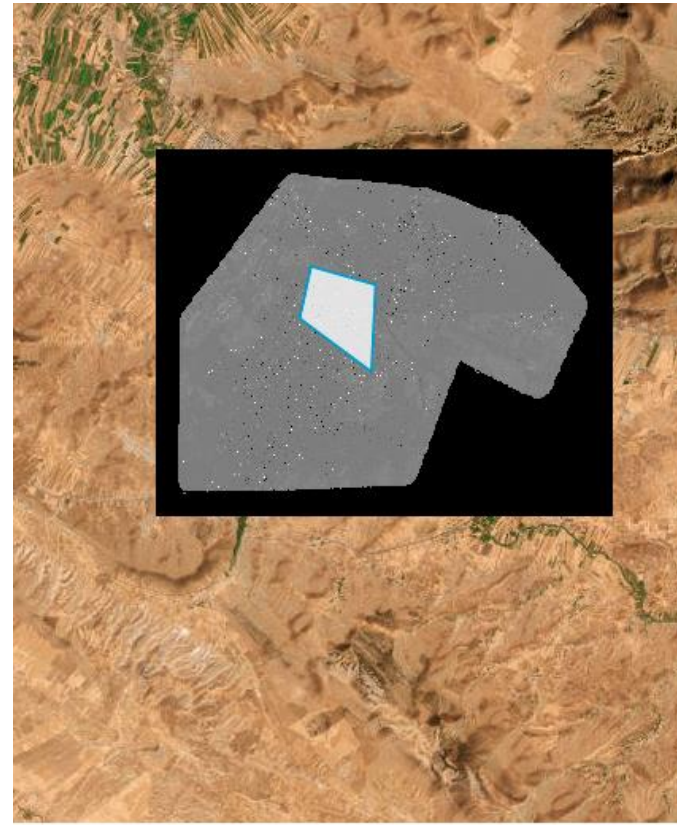
Project results

The polygon is drawn by the user.
Suppose this is the farm land.

Project results

Spectral Index DTM

Dtm is loaded using standards of OGC

Spectral Index DTM

Ndvi is loaded using standards of OGC