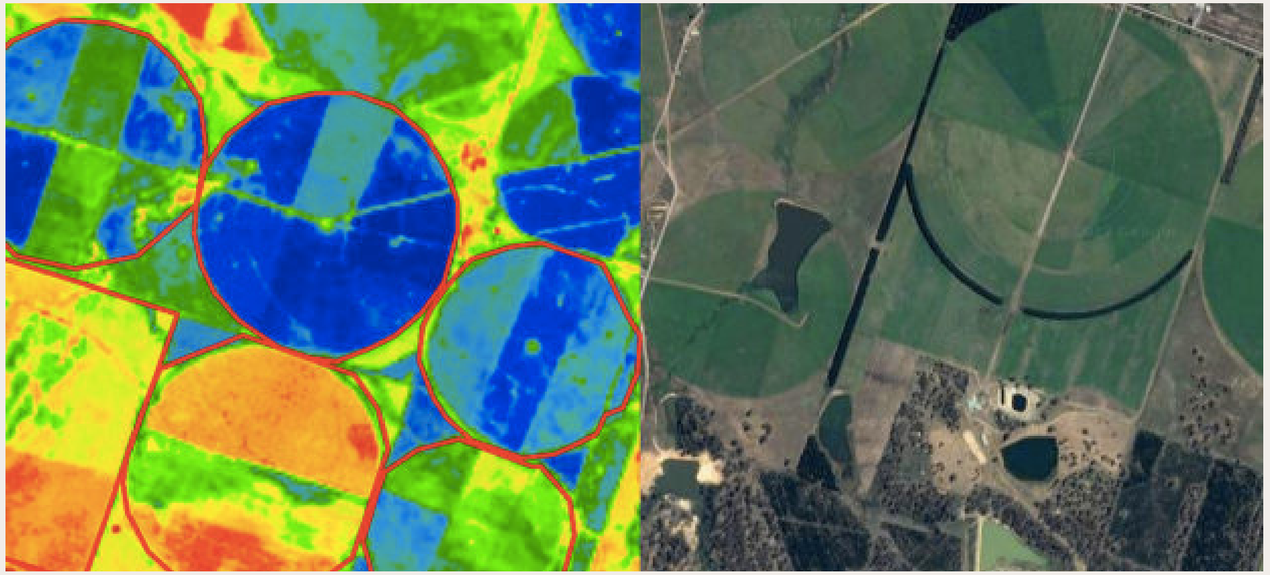

IML PROJECT TERM1

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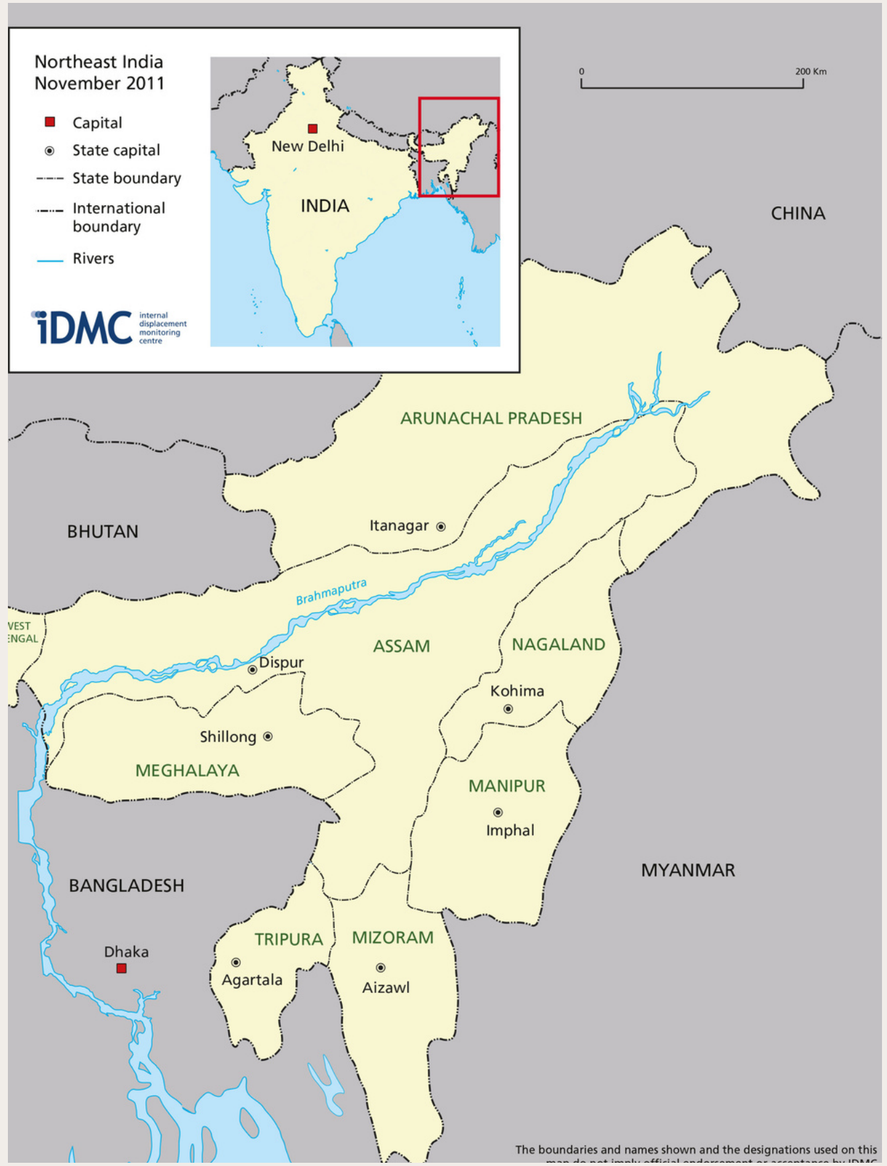
PROJECT TITLE

Predicting the Agricultural Land Boundaries after a natural disaster(in North Eastern India)- To Lower insurance premium rates for Farmers and settle land boundary disputes.



ANALYTICS CHALLENGE

The Domain of study is mainly **Agri-tech** with financial liability for an insurance company.

The domain is important because agricultural land is the only source of livelihood for farmers and the agriculture sector makes up **20.2% of the GDP of India in 2021.**

There are no leaders in this agritech space as it is still developing however there is a startup working on this which is Satsure

The domain is still nascent and there is no established market leader in this space so a template cannot be suggested.

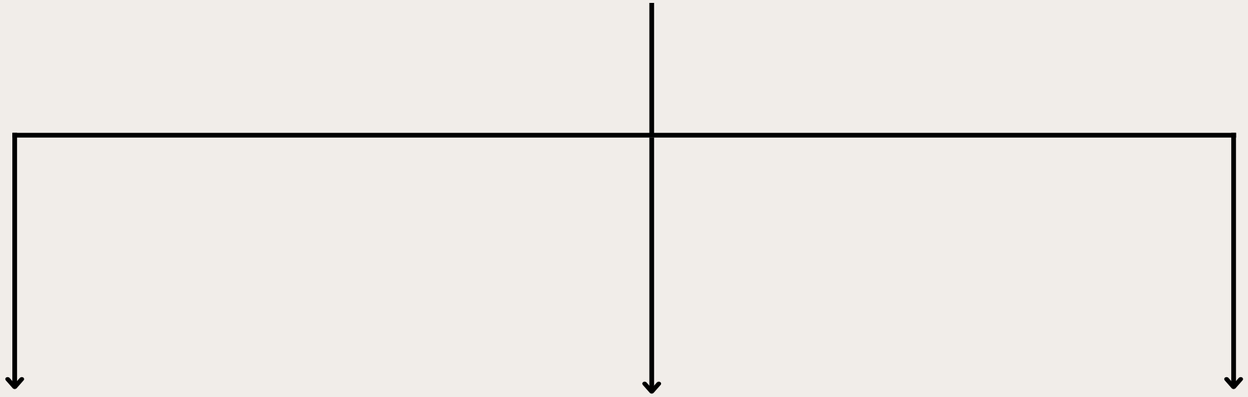
BUSINESS PROBLEM

The business problem actually deals with farmers who work in hilly areas of India and often lose their land and harvest because of various naturally occurring calamities.

The problem is two folds here, firstly the farmers are unable to claim their insurance, and also the banks are unable to decide the premium as the land boundary shifts and previous boundaries cannot be identified without error.
The stakeholders are Farmers, Insurance or Credit Institution

The benefits of solving this business problem are that it will help the farmers to claim insurance for the damages and also help demarcate the boundaries which shift due to landslides, rainfall, flash flood, etc, and also help the financial institutions in claim settlement and lower the average premium for Insurance.

Business Data



Historical Land Records

Historical Land records can be accessed from the Department of Land Resources

Satellite Imagery

Satellite imagery and data will help track and determine the change in topography after an natural calamity.

Drones

The drone will be used mostly in monitoring crop growth and crop production and arriving at the sum assured by the insurance company in the event of a failure. Also, sometimes satellite imagery might not be able to give the correct detailed imagery due to natural barriers where drones can be employed for the same purpose.

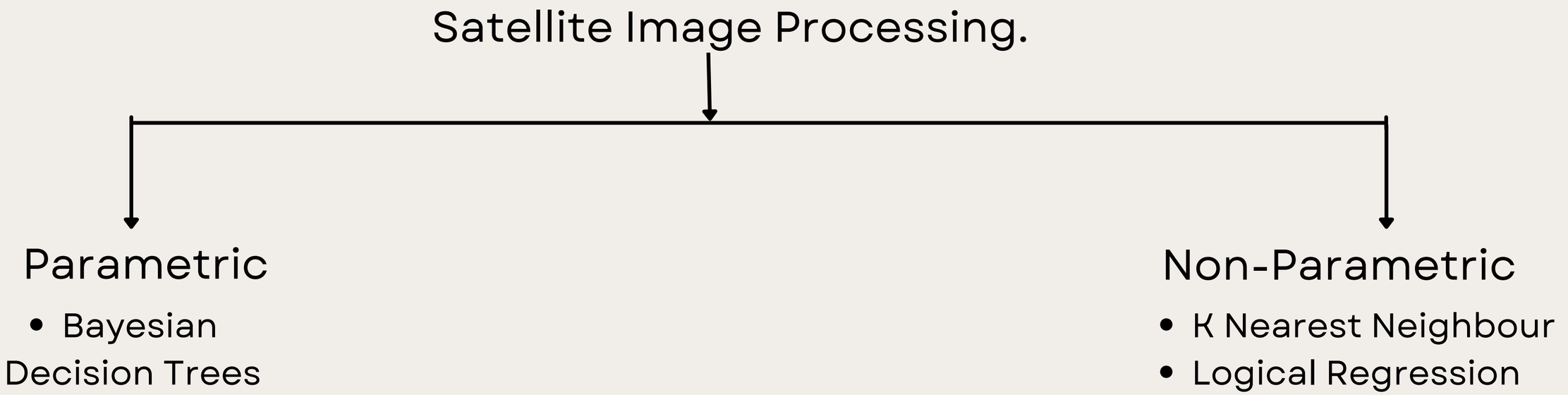
CHALLENGES TO SOLVE WHILE COLLECTING DATA

01 Some historical land records are quite old, non-existent, or not digitalized. these factors often lead to confusion between parties.
Additionally there are bureaucratic challenges in accessing government documents.

02 Satellite imagery is sometimes not reliable enough for land-related data and especially when we are dealing in hilly areas the clouds, fogs and treetops block the image and does not provide adequate data for evaluation.

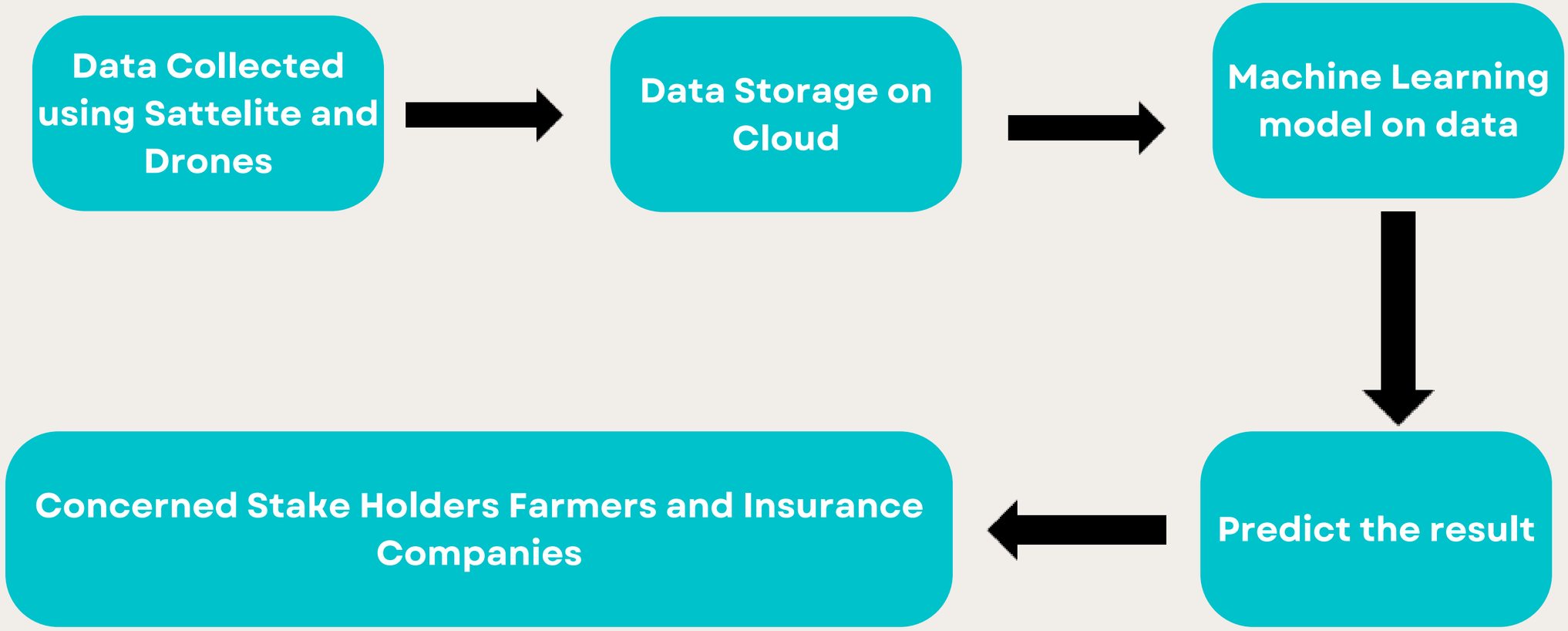
03 Legislative Uncertainty as for drones as permission has to be taken from DGCA before use, often costly and can get lost due to malfunction.

MODELLING AND EVALUATION



CNN (Convolutional Neural Network) is used for image processing to identify the objects in an image and then we use machine learning

DEPLOYMENT


Data Collected using Sattelite and Drones
Data Storage on Cloud
Machine Learning model on data
Predict the result
Concerned Stake Holders Farmers and Insurance Companies

KEEPING AHEAD OF COMPETITION

As Agri-Tech is still in the developing stage and not yet fully explored in India so rather than competing in this field we can collaborate with others who are solving this kind of problem related to farmers so that it helps our country as a whole and agriculture being one of the important fields and open more job opportunities. This will help solve problems for firstly farmers in the way of getting insurance claims in case of disaster, secondly, financial institutions providing insurance to decide appropriate premium for the land, and also the government in a way that reduces the burden on the government for paying remuneration in case of natural disaster.

CHALLENGES AND MITIGATION

- While collecting the data related to land we have to work with government officials which need lots of validations at different levels before getting hold of a large amount of information
- Most of the historic data are not digitized we need to digitize them.
- Satellite imagery cannot be always considered accurate.
- For using drones we have to take permission from DGCA before using it , so that there should not be harassment and security concerns reported to the authority

Future plan

If this project model works efficiently, we are planning to implement the same across India and areas where these kinds of facilities are not available, such that, we can get provide the farmers, banks, and insurance companies with technological facilities.

ACKNOWLEDGEMENT

We would like to extend our heartiest gratitude towards Dr Sourav Saha for providing us with the opportunity for creating this project and guiding us throughout.