AI BASED CROP IDENTIFICATION

ORGANIZATION – Indian Space Research Organisation (ISRO)

CATEGORY – Software

DOMAIN BUCKET – Software - Mobile App development

PROBLEM CODE – PJ234

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PROBLEM STATEMENT

◈ AI based crop identification mobile app

THE GOAL

- The goal is to develop an android application that can identify crop only using field photo of a crop .

- The application will allow the user to take photos and automatically identify the crop.

- The photo and crop information along with geolocation information should be stored in an internal database which can be exported/emailed.

TECHNOLOGY STACK

◈ **Web scraping** is the process of gathering information from the Internet. Even copy-pasting the lyrics of your favorite song is a form of web scraping! However, the words "web scraping" usually refer to a process that involves automation.

◈ The incredible amount of data on the Internet is a rich resource for any field of research or personal interest. To effectively harvest that data, you'll need to become skilled at web scraping. The Python libraries requests and Beautiful Soup are powerful tools for the job.

◈ Beautiful Soup is a Python package for parsing HTML and XML documents. It creates a parse tree for parsed pages that can be used to extract data from HTML, which is useful for web scraping. It is available for Python 2.7 and Python 3.
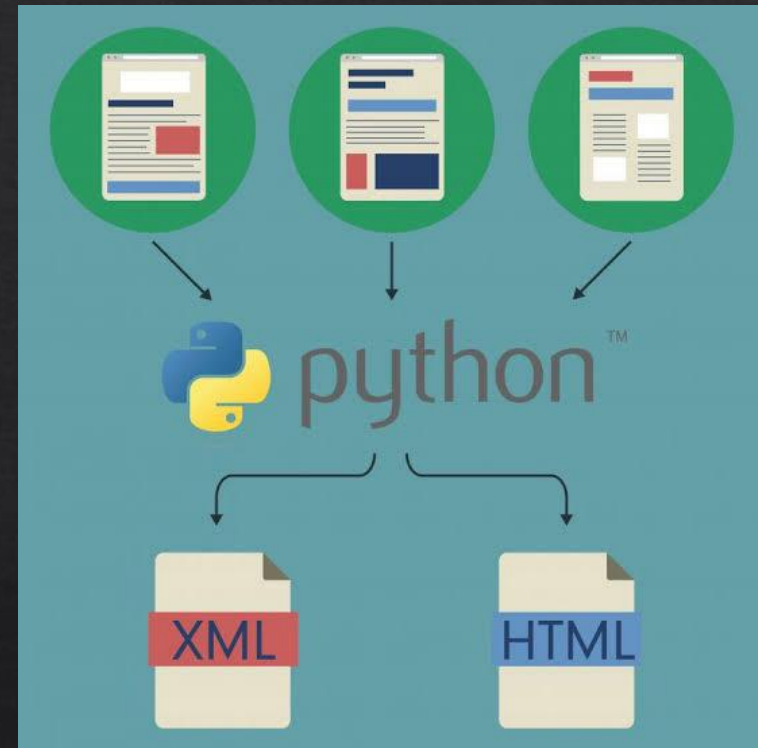
OUR PLAN

◈ We are developing a state of the art deep learning model to detect and differentiate between various crops

◈ The model will be running offline on android phones and hence will greatly reduce network traffic / server computing.

◈ The models are quantised into tensorflow lite models which are lesser in size but still have a similar accuracy .

◈ They can also be run on mobile GPUs which will increase the overall speed of inference.

◈ Due to this , these image models can be easily converted into video processing models to gain a greater accuracy.

◈ The saved images along with their geo location can be exported to an external database for further analysis .

USE CASE / FUNCTIONALITIES

- Support for multi seasonal crop detection makes the model more robust

- This model can be extended to detect healthy and damaged crops which can benefit the farmers.

- Multi lingual support can be provided for the mobile app.