HCL INTERSHIP - MINI PROJECT

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Title:- Productivity Prediction For Agriculture.

Machine learning is an important decision support tool for Productivity Prediction for Agriculture, including supporting decisions on what crops to grows and what to do during the growing season of the crops. Productivity Prediction For Agriculture is one of the challenging problems in Precision agriculture, and this Problem requires many different factors such as use of fertilizer, season, soil type --- etc.

Software Requirements:-

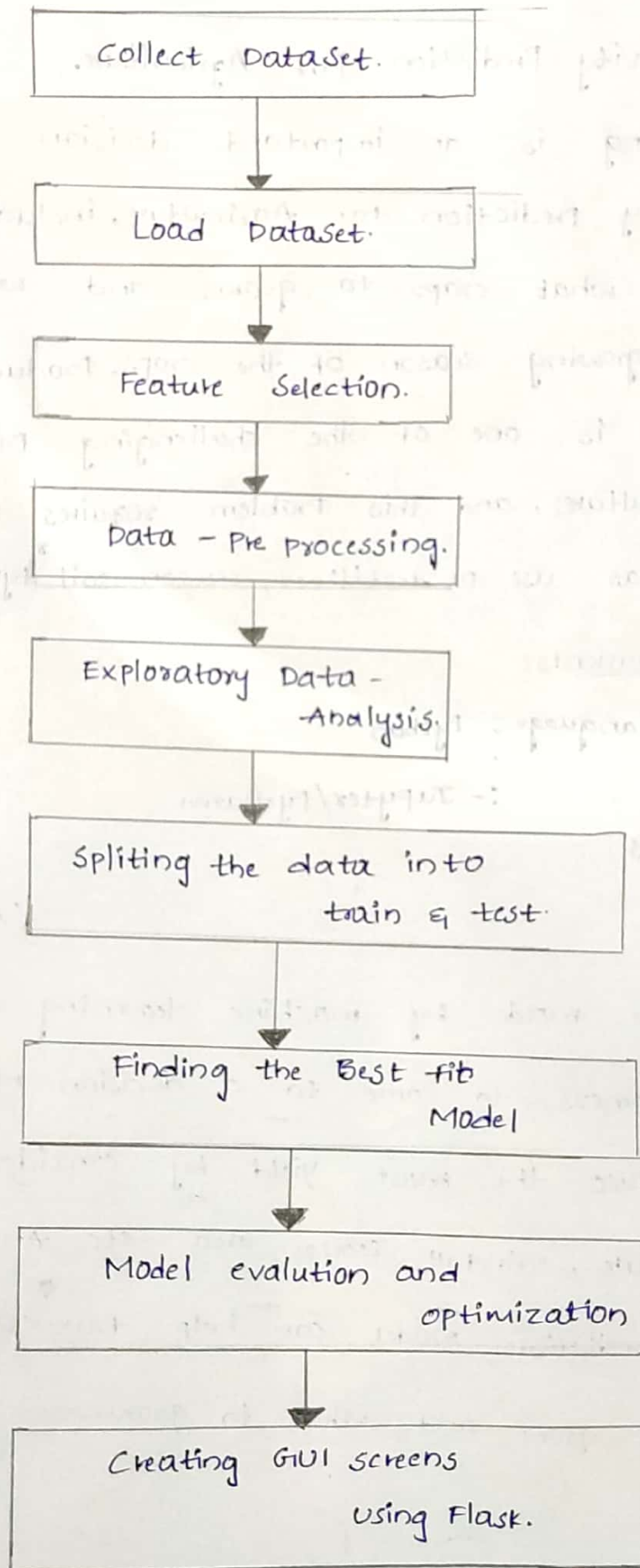Programming Language :- Python

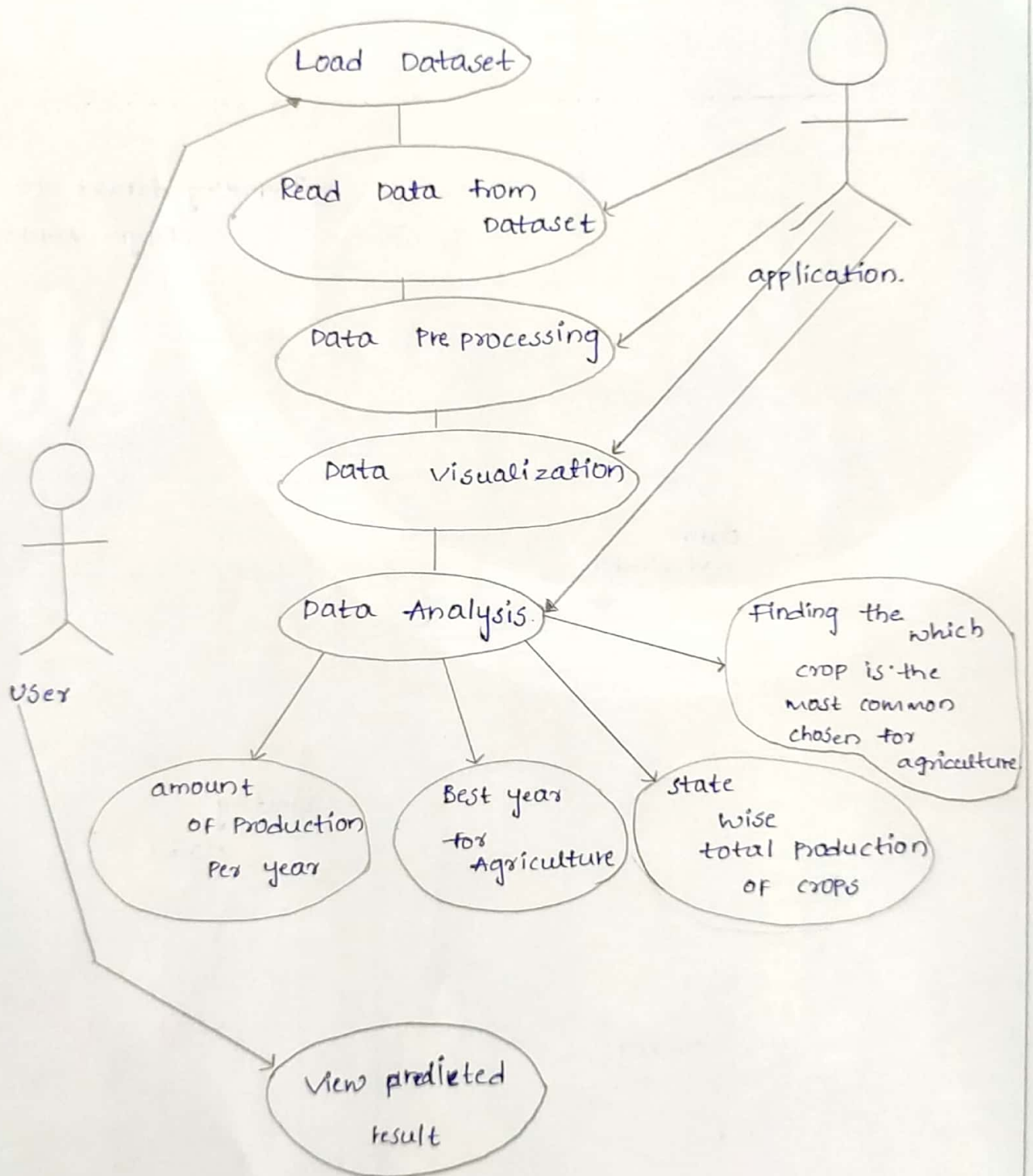IDE   :- Jupyter/Pycharm

Flask, HTML, CSS.

Scope:-

The Prediction made by machine learning algorithms will help the farmers to come to a decision which krop to grow to induce the most yield by considering factors like temperature, rainfall, season, area ---etc. An accurate crop yield prediction model can help framers to decide on what to grow and when to grow.

Control Flow Diagram:-

```
┌─────────────────────────┐
│    Collect Dataset.     │
└─────────────────────────┘
             │
             ▼
┌─────────────────────────┐
│     Load Dataset.       │
└─────────────────────────┘
             │
             ▼
┌─────────────────────────┐
│   Feature Selection.    │
└─────────────────────────┘
             │
             ▼
┌─────────────────────────┐
│  Data - Pre Processing. │
└─────────────────────────┘
             │
             ▼
┌─────────────────────────┐
│   Exploratory Data -    │
│            Analysis.    │
└─────────────────────────┘
             │
             ▼
┌─────────────────────────┐
│  Spliting the data into │
│         train & test.   │
└─────────────────────────┘
             │
             ▼
┌─────────────────────────┐
│  Finding the Best fit   │
│              Model      │
└─────────────────────────┘
             │
             ▼
┌─────────────────────────┐
│  Model evalution and    │
│           optimization  │
└─────────────────────────┘
             │
             ▼
┌─────────────────────────┐
│  Creating GUI screens   │
│        using Flask.     │
└─────────────────────────┘
```

USE CASE DIAGRAM :-

Ideation Map:-

State-Name	District-Name	crop-year	Season	Crop	Area	Production
Andhra Pradesh	kurnool	2000	Klarif	Rice	102.0	321
Telanga	Nalgom	2001	Whole	wheat	200.0	691
Tamil nadu	Seum	2002	blarif	Baran	712.0	165
~	~	~	~	~	~	~
~	~	~	~	~	~	~
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Importing dataset to Jupyter Notebook

Jupyter Mini Project - HCL

File   Edit   View   Insert   Cell   Kernel

```
[1] import pandas as pd
[2] df = pd.read_csv ("productivity.csv")
[3] df
```

state	District	crop	seaso	crop	Ax	Pw

Data Visualization.

Jupyter Miniproject - HCL

File   Eidt   New   Insert   cell   kernel

```
[1] import matplotlib as plt
[2] plt.hist()
    y = x ()
    plt.show()
```

Creating Model

Jupyter Miniproject - Hcl

File   Eidt   view   Insert   cell   kernel

```
[1] from sklearn.ensemble import RandomForestRegressor
    from sklearn.model_selection import train-test-split
[2] X-train, X-test, y-train, Y-test = train-test-split()
[3] model = RandomForest()
    model.fit (X-train, y-train)
```

Creating GUI screens

Enter state [   ]

Enter crop [   ]

Enter season [   ]

Enter Area [   ]

[Predict]

Result [   ]

Thank you !