

Sri Lanka Institute of Information Technology



Research Project - IT4010

B.Sc. (Hons) in Information Technology

Status Document - 01

Group ID: 24-010

Supervisor: Dr. Darshana Kasthurirathna

Co- supervisor: Poojani Gunathilak

Registration Number: IT21045530

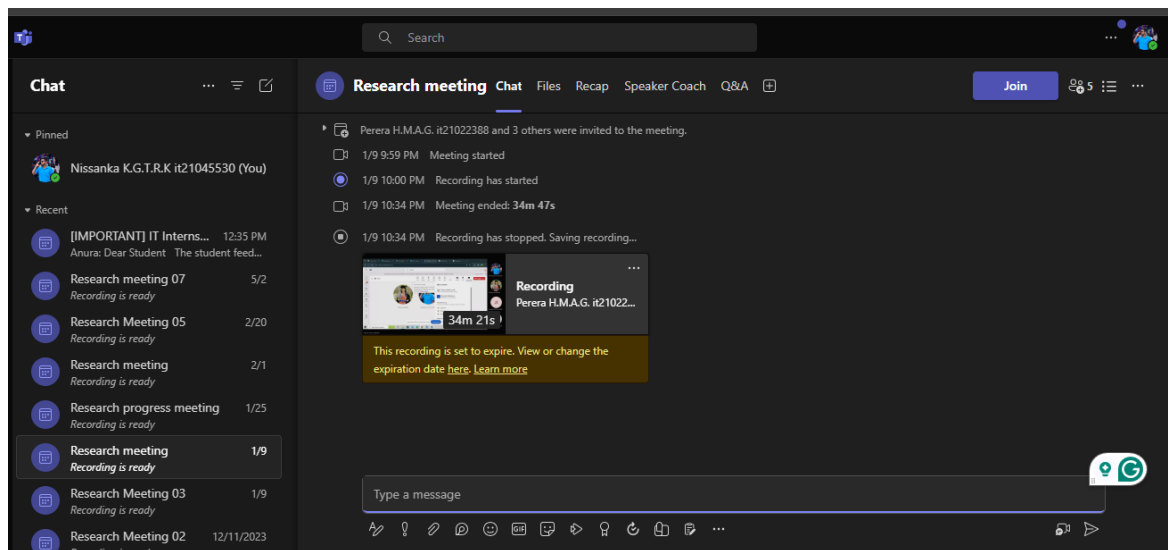
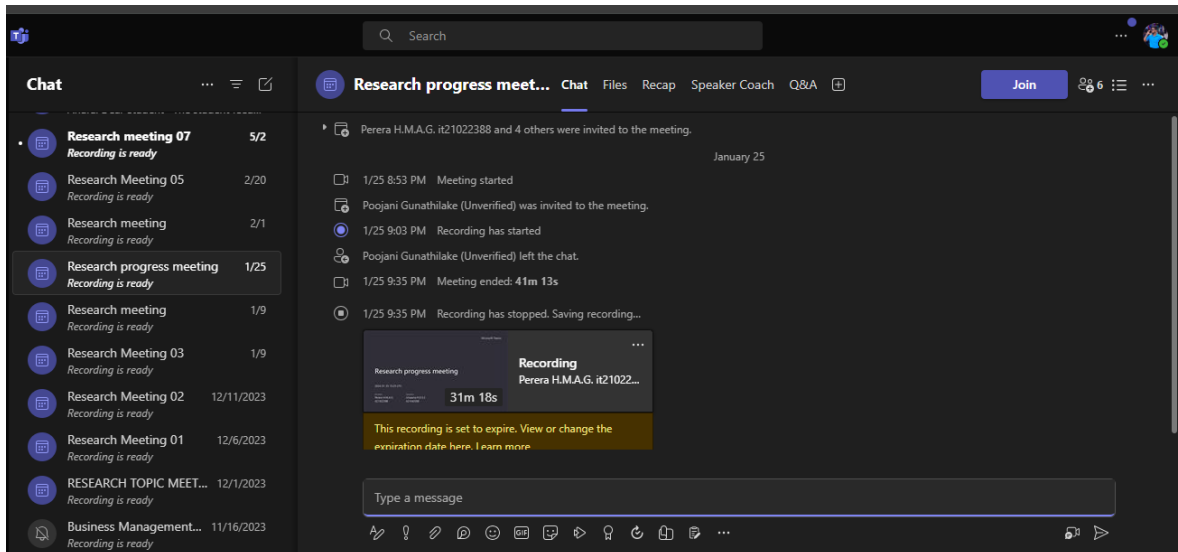
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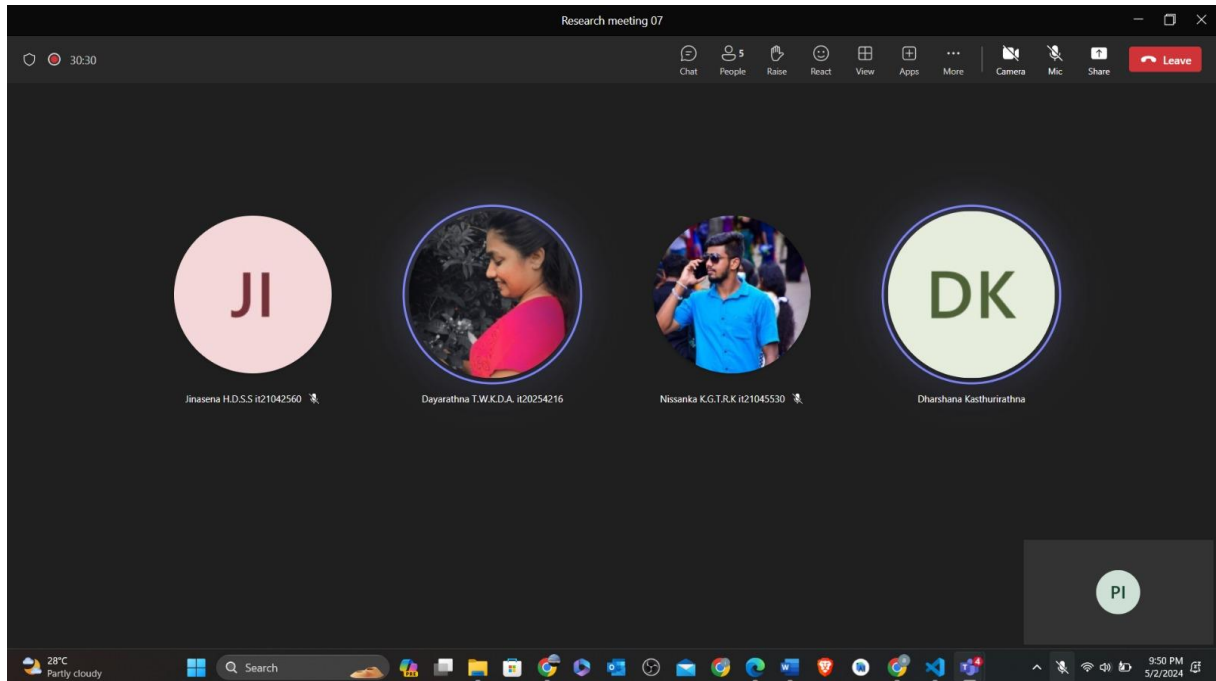
Specialization: Information Technology

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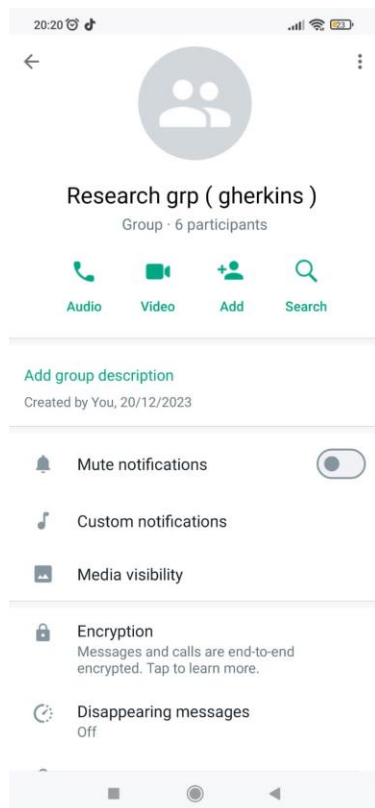
1. **Screenshots of the chats in MS Teams**
2. **Screenshots of the WhatsApp group and chats.**
3. **Group Working**
4. **Site visit to Nikawaratiya**
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1. Screenshots of the chats in MS Teams

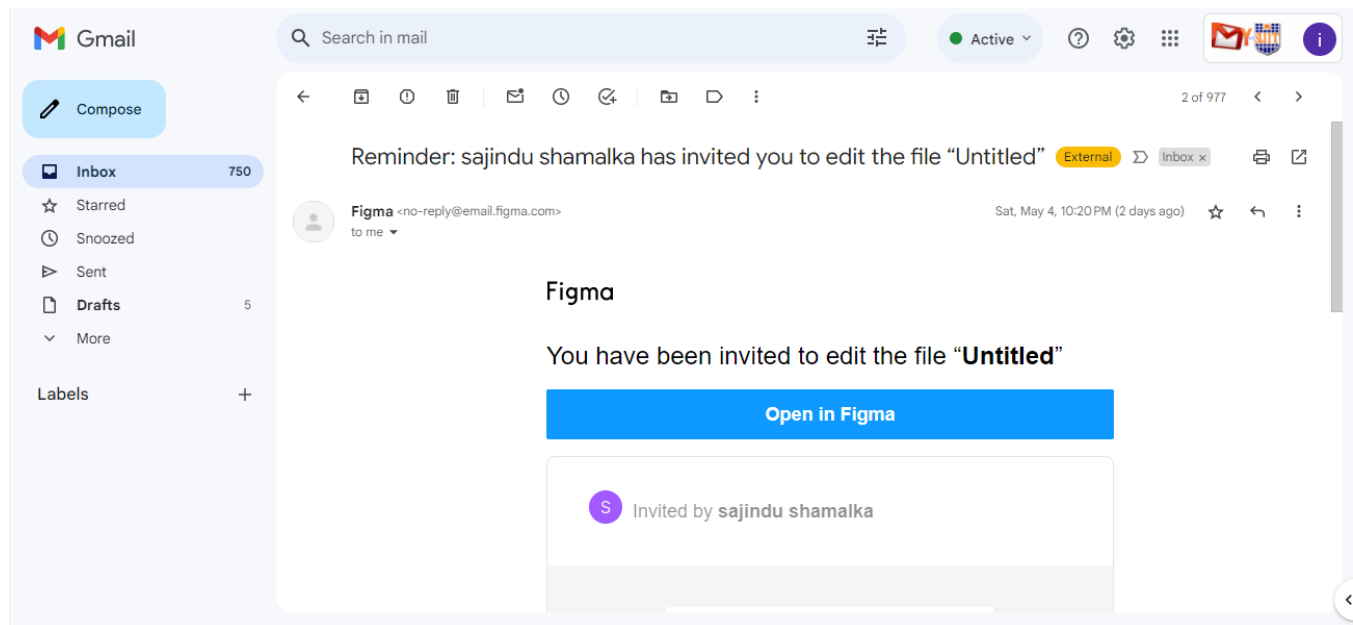
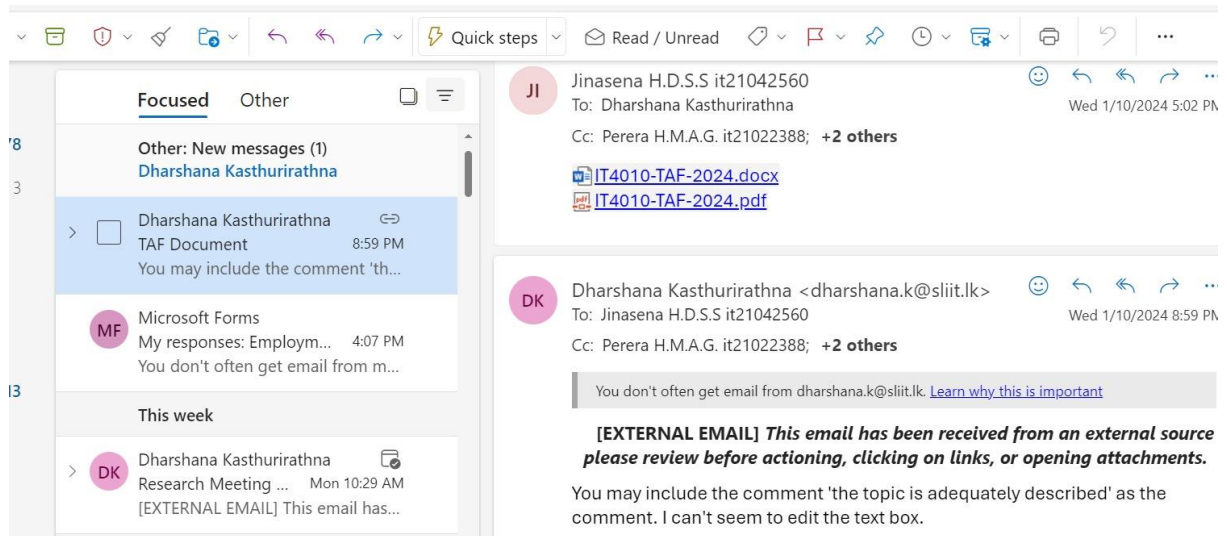


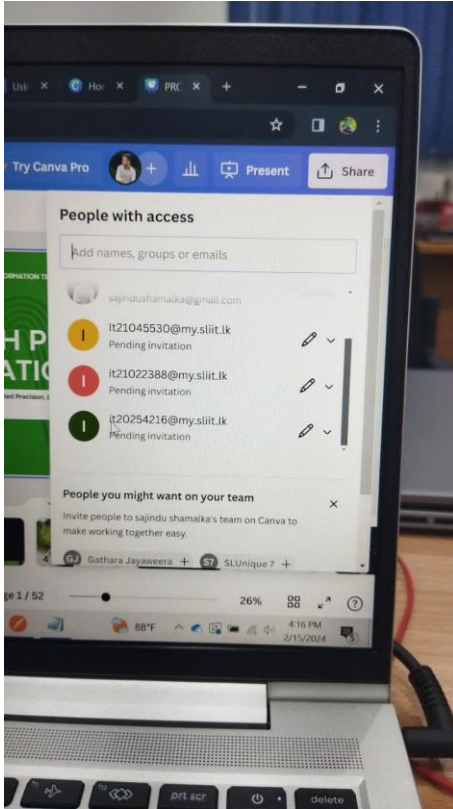


2. Screenshots of the WhatsApp group and chats.



3. Group Working





4. Site visit to Nikawaratiya







5. Company visit to physical meetings and collect data







Board of Investment of Sri Lanka
Export Processing Zone - Biyagama
Temporary Entry Permit

45/FO/ZM/18

Gate No. : 1 Internal Request Permit No. : 0003942950
Request Ref. No. : 0002272573

Visitors / Suppliers / Businessmen / Contractors

Date of Issue : 10/04/2024 10:33AM Issued to : Jinaseena h.d.s.s
Identification No. : 200032300967 Place of Visit : H.J.S. CONDIMENTS LTD. 134004363-1
Purpose : Visitor Valid From : 10/04/2024 To : 10/04/2024
Rs.110.00/= (Inclusive of applicable VAT) VAT Reg. No. : 409038018-7000

Authorised Officer

NB : Individuals - National Identity Card to be produced along with the permit
Vehicle - This permit must be displayed on the top left hand corner of the wind screen of the vehicle



Board of Investment of Sri Lanka
Export Processing Zone - Biyagama
Temporary Entry Permit

45/FO/ZM/18

Gate No. : 1 Internal Request Permit No. : 0003942951
Request Ref. No. : 0002272573

Visitors / Suppliers / Businessmen / Contractors

Date of Issue : 10/04/2024 10:33AM Issued to : Perera h.m.a.g
Identification No. : 200065600216 Place of Visit : H.J.S. CONDIMENTS LTD. 134004363-1
Purpose : Visitor Valid From : 10/04/2024 To : 10/04/2024
Rs.110.00/= (Inclusive of applicable VAT) VAT Reg. No. : 409038018-7000

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Board of Investment of Sri Lanka
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Temporary Entry Permit

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Gate No. : 1 Internal Request Permit No. : 0003942952
Request Ref. No. : 0002272573

Visitors / Suppliers / Businessmen / Contractors

Date of Issue : 10/04/2024 10:33AM Issued to : Nissanka k.g.i.r.k
Identification No. : 200131302165 Place of Visit : H.J.S. CONDIMENTS LTD. 134004363-1
Purpose : Visitor Valid From : 10/04/2024 To : 10/04/2024
Rs.110.00/= (Inclusive of applicable VAT) VAT Reg. No. : 409038018-7000

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Export Processing Zone - Biyagama
Temporary Entry Permit

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Gate No. : 1 Internal Request Permit No. : 0003942953
Request Ref. No. : 0002272573

Visitors / Suppliers / Businessmen / Contractors

Date of Issue : 10/04/2024 10:33AM Issued to : Chiranthan t.w.k.d.s
Identification No. : 996040682V Place of Visit : H.J.S. CONDIMENTS LTD. 134004363-1
Purpose : Visitor Valid From : 10/04/2024 To : 10/04/2024
Rs.110.00/= (Inclusive of applicable VAT) VAT Reg. No. : 409038018-7000

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HJS CONDIMENTS LIMITED


ROD Approved Company Reg No. 19400

Block 61, 61A, 62 & 63, Biyagama Export Processing Zone (B.E.P.Z.), Biyagama, Sri Lanka

Tel: +94 11 2483024 +94 11 2483271 +94 11 7021764 Fax: +94 11 2483720

E-mail: info@hjscondiments.com Web: www.hjscondiments.com

Post: P.O. Box 18, Malwana



Directors - A.M. Pathiranga (Chairman), Mr. J. Chamrasena (Managing Director)

A.C. Pathiranga, D.G. Thapaneera, L.N. Abeyaratne

S. Kodama, M. Yamahara, M. Symons, G. Obayashi

Research Collaboration Agreement Between HJS Condiment Limited & Final Year Students of SLIIT

Parties Involved:

This agreement is made on between:

This Agreement is made on this 1st of March Two Thousand and Twenty Four (2024) between HJS CONDIMENTS LIMITED bearing Registration No. PB 408 (OLD No. N (P85)436 a company duly incorporated under the Laws of Sri Lanka and having its registered office at Block 61, 62, & 63, Biyagama Export Processing Zone, Biyagama, Sri Lanka (hereinafter sometimes called and referred to as the "HJS" which term or expression shall mean and include the said HJS CONDIMENTS LIMITED and its successors and permitted assigns.

&


The Final Year Research Students named in below of Sri Lanka Institute of Information Technology Campus, located in Malabe, Sri Lanka, collectively referred to as the "SLIIT"

JINASENA H.D.S.S. - IT21042560 (200013200967)	
DAYARATHNA T.W.K.D.A. - IT20254516 (996040682 V)	
PERERA H.M.A.G. - IT21022388 (200065600216)	
NISSANKA K.G.T.R.K. - IT21045530 (200131302165)	

Background:

HJS Condiment Limited is a company specializing in the production and distribution of fruits and vegetables, particularly gherkins. The company is committed to research and development in the gherkin planting in the industry.


The final year research students of the SLIIT are currently pursuing their academic studies and possess knowledge and skills in various fields relevant to the development of innovative systems for the gherkin industry.



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



S. Kodama, M. Yamahara, M. Symons, G. Obayashi




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
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Purpose:

The Parties wish to collaborate on the development of an innovative Multifunctional System to Transform the Gherkin Planting Industry, with specific sub-objectives outlined below:

- Develop a pest control system incorporating intelligent identification techniques for effective pest management.
- Design a predictive maintenance system capable of forecasting fertilizer stock levels for efficient management.
- Implement a disease identification and prediction system to devise effective disease management strategies.
- Analyze market data to predict gherkin prices nationwide using historical data, weather patterns, global supply and demand, and economic indicators.

Scope of Work:


- HJS Condiment shall provide access to relevant resources, including but not limited to, data, facilities, and subject matter experts, necessary for the successful execution of the project.
- The Students shall conduct research, analysis, and development activities as outlined in the sub-objectives above, utilizing their expertise and resources available at SLIIT.
- Both Parties shall collaborate closely, exchanging information, ideas, and progress reports throughout the project.



Directors - A.M. Pathiranga (Chairman), Mr. J. Chamrasena (Managing Director)

A.C. Pathiranga, D.G. Thapaneera, L.N. Abeyaratne





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


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Intellectual Property:

Any intellectual property developed during the collaboration shall be completely owned by the HJS Condiment Limited. SLIIT students hereby agree that any intellectual property developed during the course of collaboration with HJS Condiment Limited shall remain confidential. Students are expressly prohibited from disclosing, sharing, or otherwise disseminating any such intellectual property to any third party without prior written permission from HJS Condiment Limited. This includes but is not limited to inventions, designs, processes, trademarks, and any other proprietary information developed in connection with the collaboration. Any unauthorized disclosure of intellectual property shall be considered a breach of this agreement and may result in legal action.


Confidentiality:

The parties shall maintain strict confidentiality regarding all proprietary information exchanged during the collaboration. This includes but is not limited to, research findings, data, algorithms, and any other sensitive information.

Term and Termination:

This Agreement shall commence on the date of signing and shall remain in effect until the completion of the project unless terminated earlier by mutual agreement of the Parties or for breach of terms.


IN WITNESS WHEREOF, the Parties hereto have executed this Agreement as of the date first written above.



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



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
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


S. Kodama, M. Yamahara, M. Symons, G. Obayashi

Ananda Pathiranga


Ananda Pathiranga

CEO / director

HJS Condiment Limited:

 [Signature] <i>H.D.S.S. Jinaseena</i> [Name]	 [Signature] <i>T.W.K.D.A. Dayarathna</i> [Name]
 [Signature] <i>H.M.A.G. Perera</i> [Name]	 [Signature] <i>K.G.T.R.K. Nissanka</i> [Name]


SLIIT Campus Students



Directors - A.M. Pathiranga (Chairman), Mr. J. Chamrasena (Managing Director)

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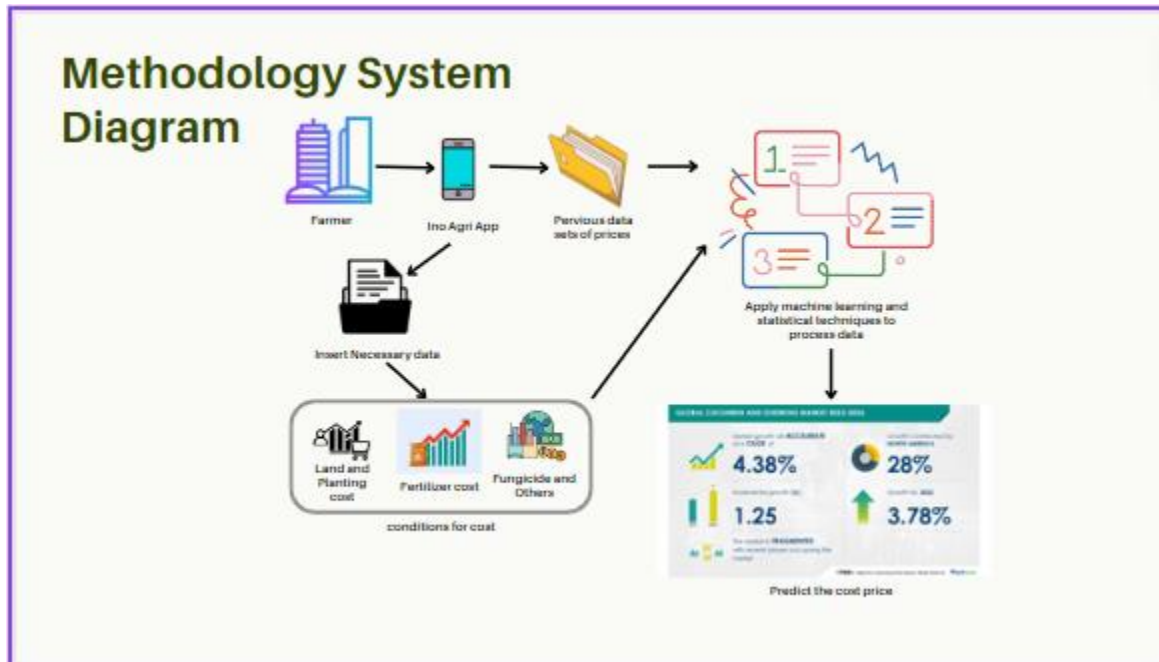
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6. System Diagram



7. Model creation using Jupyter notebook

Jupyter Cost Predictor Model Last Checkpoint: 4 days ago

```
[1]: !pip install numpy
!pip install pandas

Collecting numpy
  Downloading numpy-1.26.4-cp311-cp311-win_amd64.whl.metadata (61 kB)
    ..... 0.0/61.0 kB ? eta -:--:--
    ..... 10.2/61.0 kB ? eta -:--:--
    ..... 20.5/61.0 kB 162.5 kB/s eta 0:00:01
    ..... 30.7/61.0 kB 163.8 kB/s eta 0:00:01
    ..... 30.7/61.0 kB 163.8 kB/s eta 0:00:01
    ..... 41.0/61.0 kB 178.6 kB/s eta 0:00:01
    ..... 51.2/61.0 kB 163.8 kB/s eta 0:00:01
    ..... 61.0/61.0 kB 171.0 kB/s eta 0:00:00
  Downloading numpy-1.26.4-cp311-cp311-win_amd64.whl (15.8 MB)
    ..... 0.0/15.8 MB ? eta -:--:--
    ..... 0.0/15.8 MB 1.3 MB/s eta 0:00:13
    ..... 0.1/15.8 MB 975.2 kB/s eta 0:00:17
    ..... 0.1/15.8 MB 871.5 kB/s eta 0:00:19
    ..... 0.1/15.8 MB 871.5 kB/s eta 0:00:19
    ..... 0.1/15.8 MB 871.5 kB/s eta 0:00:19
    ..... 0.1/15.8 MB 491.5 kB/s eta 0:00:32

[2]: import numpy as np
import pandas as pd

[3]: data = pd.read_csv('Book2.csv')

[4]: data
```

```
[19]: X = data.drop('Total',axis = 1)
      y = data['Total']
```

```
[23]: !pip install scikit-learn
```

```
Collecting scikit-learn
  Downloading scikit_learn-1.4.2-cp311-cp311-win_amd64.whl.metadata (11 kB)
Requirement already satisfied: numpy>=1.19.5 in c:\users\hp\downloads\cost price (from scikit-learn)
Collecting scipy>=1.6.0 (from scikit-learn)
  Downloading scipy-1.13.0-cp311-cp311-win_amd64.whl.metadata (60 kB)
----- 0.0/60.6 kB ? eta -:-:-
----- 10.2/60.6 kB ? eta -:-:-
----- 60.6/60.6 kB 645.4 kB/s eta 0:00:00
Collecting joblib>=1.2.0 (from scikit-learn)
  Downloading joblib-1.4.0-py3-none-any.whl.metadata (5.4 kB)
Collecting threadpoolctl>=2.0.0 (from scikit-learn)
  Downloading threadpoolctl-3.5.0-py3-none-any.whl.metadata (13 kB)
Download scikit_learn-1.4.2-cp311-cp311-win_amd64.whl (10.6 MB)
----- 0.0/10.6 MB ? eta -:-:-
----- 0.1/10.6 MB 1.3 MB/s eta 0:00:09
----- 0.1/10.6 MB 1.8 MB/s eta 0:00:06
----- 0.2/10.6 MB 1.6 MB/s eta 0:00:07
----- 0.2/10.6 MB 1.5 MB/s eta 0:00:07
```

```
[9]: data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1200 entries, 0 to 1199
Data columns (total 9 columns):
 #   Column                Non-Null Count  Dtype
---  ---
 0   Land_No               1200 non-null  int64
 1   Acre                 1200 non-null  int64
 2   Land_Planting         1200 non-null  int64
 3   Strate_Fertilizer     1200 non-null  int64
 4   Liquid_Fertilizer     1200 non-null  int64
 5   Fungicide             1200 non-null  int64
 6   Insecticide           1200 non-null  int64
 7   Others                1200 non-null  int64
 8   Total                1200 non-null  int64
dtypes: int64(9)
memory usage: 84.5 KB
```

```
[10]: data.head(2)
```

```
[10]:
```

	Land_No	Acre	Land_Planting	Strate_Fertilizer	Liquid_Fert
0	1	1	48000	156640	
1	2	1	44000	158900	


```
[28]: def model_acc(model):
      model.fit(X_train, y_train)
      acc = model.score(X_test, y_test)
      print(str(model)+ ' --> ' +str(acc))

[30]: from sklearn.linear_model import LinearRegression
      lr = LinearRegression()
      model_acc(lr)

      from sklearn.linear_model import Lasso
      lasso = Lasso()
      model_acc(lasso)

      from sklearn.tree import DecisionTreeRegressor
      dt = DecisionTreeRegressor()
      model_acc(dt)

      from sklearn.ensemble import RandomForestRegressor
      rf = RandomForestRegressor()
      model_acc(rf)

      LinearRegression() --> 1.0
      Lasso() --> 0.9999999999189141
      DecisionTreeRegressor() --> 0.9952158126432307
      RandomForestRegressor() --> 0.998971424519347
```

8. Frontend UI Wireframes

