



Sri Lanka Institute of Information Technology

PROJECT REGISTRATION FORM

(This form should be completed and uploaded to the Cloud space on or before XXXXXXXXX)

The purpose of this form is to allow final-year students of the B.Sc. (Hon) degree program to enlist in the final-year project group. Enlisting in a project entails specifying the project title and the details of four members in the group, the internal supervisor (compulsory), the external supervisor (may be from the industry), and indicating a brief description of the project. The description of the project entered on this form will not be considered as the formal project proposal. It should however indicate the scope of the project and provide the main potential outcome.

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| PROJECT TITLE (As per the accepted Topic Assessment Form) | Smart Mango – A Smart System for Mango Plantation Management |
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| RESEARCH AREA (As per the Topic Assessment Form) | Smart Systems (SS) |
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| PROJECT NUMBER | TMP-23-309 | (Will be assigned by the RP Team) |
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PROJECT GROUP MEMBER DETAILS: (Please start with the group leader's details)

| | STUDENT NAME | STUDENT NO. | CONTACT NO. | EMAIL ADDRESS |
|---|----------------------|-------------|-------------|------------------------|
| 1 | Withanaarachchi S.P. | IT20466008 | 0771162653 | it20466008@my.sliit.lk |
| 2 | Jayamanne B.D.N. | IT20276928 | 0716228568 | it20276928@my.sliit.lk |
| 3 | Niroshani A. | IT20103354 | 0774283644 | it20103354@my.sliit.lk |
| 4 | Aksham M.Z.M. | IT20280260 | 0768877878 | it20280260@my.sliit.lk |

SUPERVISOR, CO_ SUPERVISOR Details

| SUPERVISOR Name | CO-SUPERVISOR Name |
|-------------------------------|--------------------------------|
| Ms. Hansika Mahaaikara | Ms. Shashika Lokuliyana |
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| | |
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EXTERNAL SUPERVISOR Details (if any, may be from the industry)

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|-------------|--------------------|------------------------|------------------------|---------------------------------------|
| | | | | Attach the email as Appendix 3 |
| Name | Affiliation | Contact Address | Contact Numbers | Signature/Date |
| | | | | |

ACCEPTANCE BY CDAP MEMBER (This part will be filled by the RP team)

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| | | |
| Name | Signature | Date |
| | | |

PROJECT DETAILS

Brief Description of your Research Problem: (extract from the topic assessment form)

Mango cultivation is a developing sector in the world. Mexico, the Philippines, and Pakistan are the world's three largest mango exporters. Also, Sri Lanka has good environmental conditions for mango cultivation. But Sri Lankan people do not resort to different types of mango cultivation because there are problems like watering at the right time, usage of fertilizers, different pests, and spreading of diseases. There is also a problem with the lack of systems in Sri Lanka to increase the productivity of mango plantations. This leads to a significant loss of mango yield and quality, which can negatively impact the income of the farmers and the sustainability of the mango plantation sector. It is essential to create smart mango plantation management systems that make use of technological advancements and data analysis to address these issues. Such systems could help farmers monitor and manage their mango plantations in real time, making informed decisions based on data-driven insights. However, the implementation of smart mango plantation management systems in Sri Lanka is still in its primary stage, and there is a significant gap in the research and development of such systems. This presents an opportunity to address this research gap by developing innovative and effective smart mango plantation management systems that are tailored to the specific needs of Sri Lankan farmers and the challenges they face in the mango plantation sector.

Main expected outcomes of the project: (extract from the topic assessment form)

As the first point. The user must select a mango variety from our dashboard, and the software will then provide details about harvesting and treating tips for increased harvesting, as well as predicts for the next harvest and fertilizer usage over various time periods. And the user can find diseases regarding plants and tumors through the system; also, the solutions for these diseases can be found through the system, so there is an AI assistant in the system that will give solutions to the user. The main point is that we can use the AI assistant to show the spread of disease across areas and the predict of the disease. Also, this system will provide the smart component to release water and mix fertilizer with the water. This smart device can also be controlled from our dashboard and can be used to schedule watering and fertilizing. Trees are identified uniquely using the RFID sensors and when the harvest is collected the data is send to the cloud database. The mangoes collected are distributed with controlled environmental conditions and the distributing vehicles are tracked using the GPS technology. All the information related to the system is displayed using a mobile application and a web site.

WORKLOAD ALLOCATION (extract from the topic assessment form after correcting the suggestions given by the topic assessment panel.)

(Please provide a brief description of the workload allocation)

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|-----------------|------------------------------------|
| MEMBER 1 | Withanaarachchi S.P. IT20466008 |
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- Create an automated system to mix the fertilizer with water.
- Create an automated system to distribute the fertilizer mixed with water through a pipeline.
- Develop an alerting system to notify the management if the water and fertilizer levels in the tank are low.
- Measure soil moisture and temperature and alert the management if the values are lower than the threshold values.

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| MEMBER 2 | Jayamanne B.D.N. IT20276928 |
| <ul style="list-style-type: none"> • Identify the location of the vehicle. • Calculate the time taken by the vehicle from one tree to another tree. • Calculate how many days are spent on harvesting. • Predict the time taken to cover the land. • Use GSM technology to input data and it will be transferred to the cloud. • Present data to the production managers using a user-friendly web interface. | |

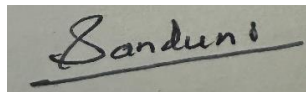

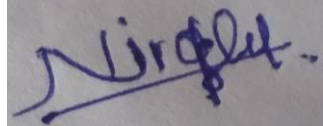
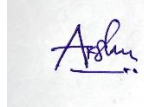
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| MEMBER 3 | Niroshani A. IT20103354 |
| <ul style="list-style-type: none"> • The goal of this component is to develop a Machine Learning algorithm to predict the harvest of various kinds of mango plantations. • There are existing research about mango harvest prediction based on different factors but we are going to use a combination of those factors for accurate prediction. • That utilizes different factors including past harvest data, temperature, humidity, soil quality, fertilizer, pest, and diseases to predict the harvest. • The project team intends to implement this algorithm to provide an accurate and scalable solution for predicting various mango plantation harvests, which can assist farmers in making decisions about when to harvest their crops. | |

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| MEMBER 4 | Aksham M.Z.M IT20280260 |
| <ul style="list-style-type: none"> • Scan the tree leaves affected by the diseases. • Providing the details of treatment methods include tree spraying or injection of fungicide. • Create a system to identify the diseases of the tree leaves using camera scanner and image processing. • According to the disease providing tree care routine and improving soil conditions that help to control disease and prevent recurrence | |

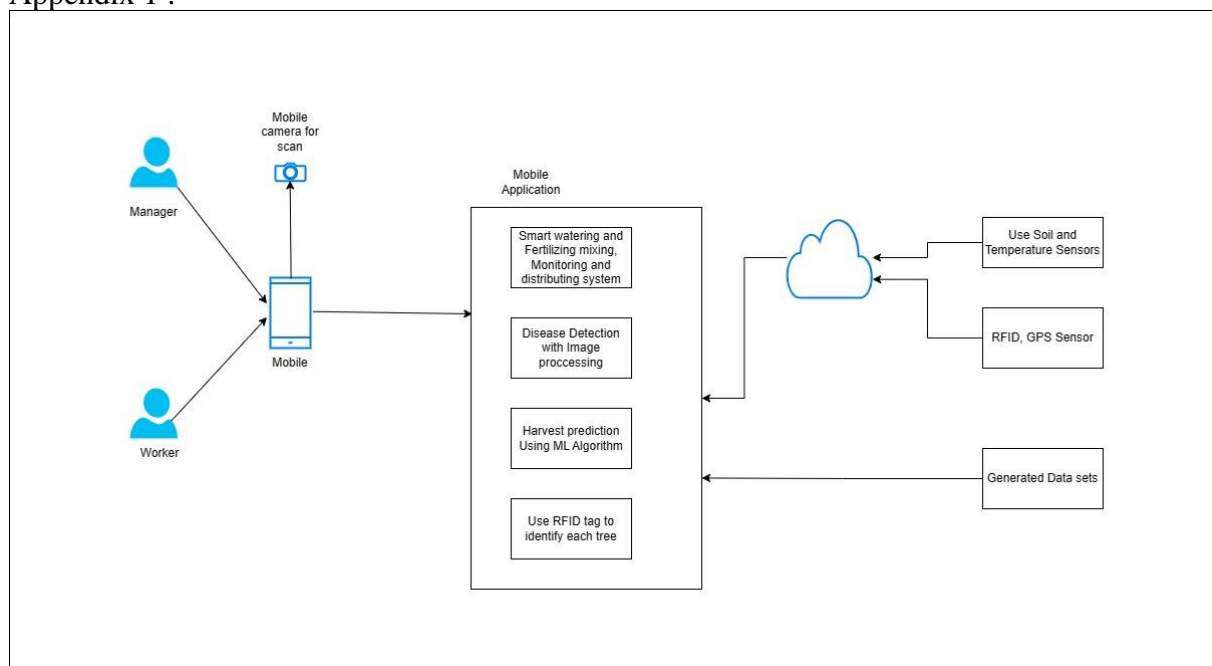
DECLARATION (Students should add the Digital Signature)

"We declare that the project would involve material prepared by the Group members and that it would not fully or partially incorporate any material prepared by other persons for a fee or free of charge or that it would include material previously submitted by a candidate for a Degree or Diploma in any other University or Institute of Higher Learning and that, to the best of our knowledge and belief, it would not incorporate any material previously published or written by another person in relation to another project except with prior written approval from the supervisor and/or the coordinator of such project and that such unauthorized reproductions will constitute offences punishable under the SLIIT Regulations.

We are aware, that if we are found guilty for the above mentioned offences or any project related plagiarism, the SLIIT has right to suspend the project at any time and or to suspend us from the examination and or from the Institution for minimum period of one year".

| | STUDENT NAME | STUDENT NO. | Signature |
|---|----------------------|-------------|--|
| 1 | Withanaarachchi S.P. | IT20466008 |  |
| 2 | Jayamanne B.D.N. | IT20276928 |  |
| 3 | Niroshani A. | IT20103354 |  |
| 4 | Aksham M.Z.M. | IT20280260 |  |

Appendix 1 :



Appendix 2 :