Sri Lanka Institute of Information Technology

PROJECT REGISTRATION FORM

(This form should be completed and submitted on or before 11.55 PM, Friday 17th January, 2020)

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), 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.

PROJECT TITLE (As per the accepted topic assessment form)	Smart Trolley for Supermarket
RESEARCH GROUP **(as per the Topic assessment Form)**	Data Science
PROJECT NUMBER	2020-078 (will be assigned by the lecture in charge)

PROJECT GROUP MEMBER DETAILS: (Please start with group leader's details)

	STUDENT NAME	STUDENT NO.	CONTACT NO.	EMAIL ADDRESS
1	Satheesan.P (GROUP LEADER)	IT17095136	0763538121	spranavi28@gmail.com
2	S.Nilaxshan	IT17037648	0771366678	nilax203@gmail.com
3	R.Thisanthan	IT17386296	0771897024	thisanthanrajaratnam7@gmail.com
4	R.Priyanka	IT17033374	0775474352	priyaraveendran47@gmail.com

SUPERVISOR Details

Name	Signature	Date
Jesuthasan Alosius		6/2/2020

CO-SUPERVISOR Details (will be assigned by the Supervisor, if necessary)

Name	Signature	Date
Janani Tharmaseelan		6/2/2020

EXTERNAL SUPERVISOR Details (if any, may be from the industry)

Name	Affiliation	Contact Address	Contact Numbers	Signature/Date

ACCEPTANCE BY CDAP MEMBER

Name	Signature	Date

PROJECT DETAILS

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

In supermarkets, every time customer has to put item one by one in the trolley and estimate the total price. If the budget allows then go to billing counter where mall staff member does the scanning of each product then further move to the billing process. So, each customer has to wait in queue for his/her turn which takes too much of time. It is a troublesome process which resulting in a heavy crowd at the counters. If a person from outside saw people are waiting in a queue to pay bills, that particular person does not show eager to go to purchase. Supermarket customers find it difficult to choose products from a large variety of products. Access to products with common attributes prevents customers from searching in confusion or wasting time. They also, don't know about the present day offers/deals that exit in the store on the item that they need to purchase. There is no system for the customers to answer their queries.

Description of the Solution: (extract from the topic assessment form)

The automatic trolley system is an intelligent system which contributes as an efficient system. RFID tag is attached to the membership card of the customer which is provided by the supermarket to their regular customers. RFID Reader is attached to shopping trolley which detects the presence of the regular customer and with this, smart trolley starts to work. Every product in Mart will have RFID tag, and every cart will be having RFID Reader. When a customer scans a product all the information such as price and name of the product is displayed while the weight of the product is also stored in the database against all barcodes. When an item is shown in front of the reader in the trolley, the amount of the item is added to the purchase bill. And also, it has the provision for removing the items from the trolley where the cost is removed from the total cost. If any customer after purchasing the product changes his mind and wants to return the product, he just has to scan the product again, product picture will be taken to confirm intended product from the Smart Trolley's tablet. A load cell, which is basically a weight sensor, is located at the bottom of the Smart Trolley to check whether the measured weight is matching with the actual weight. Recommendation also shown in the LCD screen with the aim of suggesting personalized items to customers during the time of purchase by monitoring the history of customer purchase behavior and preferences. Location of the particular recommended product also shown in the screen using GIS. A voice assistant also built in the smart trolley in order to give information about the present day's offer/deals. These will lead to buy more in less time.

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

- ✓ Allows the customers to purchase in a flexible manner.
- ✓ Achieving faster billing system and also helps buyer to know the bill details in advance so that they can plan accordingly in affordable prices.
- ✓ Reduce the time of purchase and make more efficient purchasing decisions through the recommendation system.
- ✓ Customers can get details about the present day offers/deals and also, they can able to get appropriate answers to their queries.

WORKLOAD ALLOCATION (extract from the topic assessment form)

(Please provide a brief description about the workload allocation)

MEMBER 1	**Satheesan.P IT17095136 Recommendation System and Navigation for the recommended products**

- ✓ Recommendation is done to analyze customer needs.
- ✓ It uses the purchase history of the user and the user's behavior of repetition during purchases in a supermarket.
- ✓ The user's behavior of repetition can be characterized by his/her or tendency to purchase the same item in regular time periods.
- ✓ The original aim of association rule mining is to find insightful associations from transaction data.
- ✓ Rules such as Apriori, FP-tree are used in association rule mining.
- ✓ Customers can able to get the location of the recommended products.

MEMBER 2	**S.Nilaxshan IT17037648 Loyalty Customer Program and Checkout**

- ✓ Identify the loyalty customers from the rest and facilitate them to use the trolley.
- ✓ Issuing digital loyalty card to the customer and scanning their profile from our loyalty reward application.
- ✓ RFID tag is in the loyalty membership card and RFID reader in the trolley. This connect the loyalty card and trolley.
- ✓ Application wise handling the payment.
- ✓ Reward application and setup an account for their usage and that allows them to buy a product without having to swipe a card and standing in line.

MEMBER 3	**R.Thisanthan IT17386296 Image Recognition and use of weight sensor**

- ✓ Scan the products to buy, and display all the information related to the product in the display (weight, quantity and price).
- ✓ If you take many products, you can increase the quantity.
- ✓ Weight is measured by weight sensor when scanning the items to be purchased and placed inside the trolley.
- ✓ Weight sensor is used to match the measured weight with the actual weight to avoid abnormal activities.
- ✓ Each time when the products are placed inside the trolley and its weight is checked.
- ✓ If you want to remove items inside the trolley, you have the option to remove them from the display.
- ✓ If any customer after purchasing the product changes his mind and wants to return the product, he just has to scan the product again, product picture will be taken to confirm intended product from the Smart Trolley's system and remove them from the system.
- ✓ If items other than scanned items are in trolley, they will be found during checkout.

MEMBER 4	**R.Priyanka IT17033774 Voice Assistant**

- ✓ Interact with customers to let them know about deals and offers, promotional codes.
- ✓ Voice assistant is programmed for the customers to answer questions related to supermarket as a voice message.
- ✓ Voice assistant can understand what the customer is saying and it is done through APIs.

DECLARATION

"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 construe 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
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