Sri Lanka I[illegible]chnology

Discover Your Future

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), 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)	Virtual Dressing Room: Smart approach to select and buy clothes
RESEARCH GROUP **(as per the Topic assessment Form)**	Artificial Intelligence and Machine Learning
PROJECT NUMBER	(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	Weerasinghe S.W.P.N.M	IT18001808	0715443619	It18001808@my.sliit.lk
2	Sathsara L.G.I	IT18012866	0769152716	It18012866@my.sliit.lk
3	Rajapaksha R.M.D.D	IT18066944	0770885712	It18066944@my.sliit.lk
4	Gunasekara H.S.D.N	IT17084796	0763224512	It17084796@my.sliit.lk

SUPERVISOR, CO_ SUPERVISOR Details

SUPERVISOR Name	CO-SUPERVISOR Name
Ms. Dinuka Wijendra	**Mr Dilshan de Silva**
Signature	**Signature**
Attach the email as Appendix 1	**Attach the email as Appendix 2**
Date	**Date**
2021 / 02 / 17	**2021 / 02 / 17**

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

				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)

Name	Signature	Date

PROJECT DETAILS

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

Due to the fast paced and high demanded characteristics of the clothing industry, physical and online clothing stores can be seen in all around the world. Presently, the demand for online shopping than physical shopping is increasing considering the time wastage inside a physical clothing store and when it comes to a pandemic situation like Covid 19, physical shopping can be led to a hazard situation by spreading the virus.

Even though it is an easier work to purchase items online, but the customers have to use their imagination to predict how cloths look on self by cause of the inability to trialing the clothes before purchasing. Due to the inability of trialing clothes online, virtual fitting rooms have appeared for customers with a customized 3D model feature to fit-on clothes.

Some of the existing virtual fit-on systems use sensors to get body measurements and the customers have to install the sensor for use the application. And most of the existing systems provide web applications but present-day people prefer to do everything using their mobile phones. Moreover, some of the systems provide a feature to select a skin tone from a provided list and apply to the 3D model. Due to the variety of people skin tones, selecting accurate skin tone from a provided list can be a difficult task to the customer. The inability to identify and select appropriate skin tone will be affected to the cloth selection and it will be a reason to dissatisfaction towards the ordered cloth. In addition to that, people have a plenty of preferred ways to wear a cloth including tucking or untucking a blouse, rolling up or rolling down sleeves etc. The existing systems did not facilitate the previously stated customization options. It could lead to decrease the sensibility of the virtual fit-on process.

Furthermore, the existing systems mainly focused about the customer. Apart from adding clothes to the system, the existing systems do not facilitate specific functionalities towards the clothing store. The difficulty for the clothing store employees to analyze and obtain predictions for the demand of the clothing items manually due to the large number of sales records can be affected to the clothing store by cause of buying low demand or unnecessary lots of clothing items to the store can be a great loss to the business.

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

To manage above demands on online clothing, a mobile application and a web application were proposed as the entire solution. The mobile application pivots the customers' boundary by providing browsing clothes and pre-ordering facilities in a practical way. The customers are facilitated for observing the most suitable clothing items examining their body measurements

and skin tone. The mobile application is enhanced with machine learning algorithms in order to suggest the best matching clothing items for customers by examining above parameters (body measurements, skin tone). After completing the suggestion step, the customer is facilitated to try-on selected clothing items on the 3D model that rendered according to given body measurements (with skin color) to pick as their desired clothing item and pre-order it finally. In case of customer is unsatisfied with default clothing suggestions, an AI bot is included in the application to assist the customer to pick clothing items. The mobile application is facilitating a great service by saving customers' time while providing a heuristic clothing shop experience to the customer.

The other segment of the system is a web application, which aims stock management and data analysis processes to maintain a reliable and updated stock filled with most trending clothing items throughout the year. The web application is also empowered with artificial intelligence to make predictions to maintain a proper stock by analyzing customers' pre-order details with related parameters (brand, size, colors, body measurements and etc.) In addition, the data analysis process assisting in clothes suggestion process for the customers on mobile application, by analyzing previously collected data from the customers.
Furthermore, the web application contains a section to check most sensitive statistical details such as new customer registration rate, pre-ordering rates, customer re-visitations and etc. which affect for maintaining a proper business strategy.

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

The main expected outcome of the project is developing a smart ordering system for a clothing store to satisfy their customers' clothing requirements by providing a legitimate virtual fitting room facility through a mobile application, and provide an assist to maintain their stock in a smart way with the assist of AI based predictable decisions.

The resultant objective is achieved by combining the sub objectives stated below.

- Suggesting most suitable clothing items by analyzing provided body measurements and photograph by the customer.
- Providing virtual fitting room facility for the customer using a 3D model(s) which will demonstrate the exact view of the customer.
- Providing assist of an intelligent bot to make new suggestions in case of customer unsatisfied with suggested clothes by default.
- Generate future predictions on clothing items by analyzing customers' purchasing data and maintain a preferable stock to supply trending clothing items in applicable periods throughout the year.

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

(Please provide a brief description about the workload allocation)

MEMBER 1	**Weerasinghe S.W.P.N.M IT18001808**

Determine the skin tone of the customer through the image and suggest the most suitable clothing items.

The mobile application analyzes uploaded image by the user to identify the exact skin tone of the customer using image processing and machine learning algorithms with the assist of trained dataset. Additionally, body measurement collects from the customer as user inputs. Suggest the most preferable color range of clothes, based on identified skin tone. User may pick a color and move forward. Filter and suggest the best matching clothing items along with the selected color and body measurements (with gender) that provided initially using ML algorithms. Display the filtered clothing items list to the user for proceed to checkout process.

MEMBER 2	**Sathsara L.G.I IT18012866**

Render a female 3D human model and provide the virtual fit-on facility and add animation (movements) to the 3D model.

Analyze the body measurements given in the initial step and utilize them to render a 3D model (female) of the customer. Render a 3D model (female) according to identified body

measurements and apply the exact color that identified by analyzing the photo, as the skin tone of the model. Apply selected clothing item onto the rendered model to demonstrate the view of how it looks after wore by the customer. Add movements to the rendered model (female) to demonstrate a better preview with the cloth (example: walk). Add customizable options related to females to check how outfit looks in different ways (example: tucked and untucked blouse, preview with additional clothing items such as jacket, scarf etc.).

MEMBER 3 **Rajapaksha R.M.D.D IT18066944**

Render a male 3D human model and provide the virtual fit-on facility and add animation (movements) to the 3D model.

Analyze the body measurements given in the initial step and utilize them to render a 3D model (male) of the customer. Render a 3D model (male) according to identified body measurements and apply the exact color that identified by analyzing the photo, as the skin tone of the model. Apply selected clothing item onto the rendered model to demonstrate the view of how it looks after wore by the customer. Add movements to the rendered model (male) to demonstrate a better preview with the cloth. (example: walk) Add customizable options related to males to check how outfit looks in different ways. (example: tucked and untucked shirts, roll up and roll down the sleeves etc.).

MEMBER 4 **Gunasekara H.S.D.N IT17084796**

Analyze the purchased data to predict the future trends, indicate sales statistics and implement an intelligent bot to assist customers for the selecting and ordering clothes.

Generate statistical information and conduct predictive analysis processes using ML algorithms based on pre-ordered items data (item category, size, color, brand and etc.). Suggest the type/brand of the clothes needed for the next seasons by making predictive analyses using ML algorithms. Comprehensively analyze previously collected data (body measurements, skin color, pre-ordered items) and suggest the best matching clothing items for new customers. Implement an intelligent bot to interact with the customer to pick the best matching clothing items by making new suggestions, when the customer need an extra assistant to determine clothes. Indicate sales statistics to employees by utilizing pre-ordered item data.

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 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**
1	Weerasinghe S.W.P.N.M	IT18001808	
2	Sathsara L.G.I	IT18012866	
3	Rajapaksha R.M.D.D	IT18066944	
4	Gunasekara H.S.D.N	IT17084796	

Appendix 1

2021-Reg-Topic Assessment form of TMP-21-215 for Supervisor Ms. Dinuka Wijendra Endorsement Inbox ×

Pasindu Nawodya 5:03 PM (5 hours ago)
-- S.W.Pasindu Nawodya Software Engineering undergraduate SLIIT Virus-free. www.avg.com

Dinuka Wijendra 5:09 PM (5 hours ago)
to CDAP, me

Dear All,

Please find the attached form of the topic assessment form of TMP-21-215 and I hereby confirm being the supervisor of this research project.

Thank you & best regards!
Dinuka R. Wijendra.

Appendix 2

2021-Reg-Topic Assessment form of TMP-21-215 for Co-Supervisor Mr. Dilshan Silva Endorsement Inbox ×

Pasindu Nawodya 6:31 PM (3 hours ago)
Dear sir, Here I attached Topic Assessment form. Thank you

Dilshan De Silva 8:42 PM (1 hour ago)
to CDAP, me

Dear Pasindu,

Kindly consider this as my official acceptance to co-supervise your project.

Thank you and best regards

Dilshan I. De Silva
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