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), 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)	Real-Time Augmented Reality Based Tool for Digital Media Production
RESEARCH GROUP **(as per the Topic assessment Form)**	Human Computer Interaction
PROJECT NUMBER	TMP-21-021 (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	Wanigaasekara.M.P.W.P.A	IT18108514	0767098119	it18108514@my.sliit.lk
2	A.Vihanga Nivarthana	IT18091380	0712614384	it18091380@my.sliit.lk
3	R.M Bawantha Thilan	IT18175080	0768327247	It18175080@my.sliit.lk
4	Gankanda G.M.J.U	IT18063738	0727700086	it18063738@my.sliit.lk

SUPERVISOR, CO_ SUPERVISOR Details

SUPERVISOR Name	CO-SUPERVISOR Name
Dr. Shyam Mehraaj	Mr.Thusithanjana Thilakarathne
Signature	Signature
Appendix 1	Appendix 2
22/01/2021	22/01/2021

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

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

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)

Broadcasting corrects and attractive daily news needs substantial amount of money and workforce. Because of the high budget many channels only focus on creating accuracy but forsaking the attractiveness of the delivery.

- Sometimes in some television channels, they outsource the graphic and 3D creative designing work to other companies. This happens specially in situations like the election period. This costs a fortune to the television channels. So, not all channels can spend huge amounts like that to increase the attractiveness.

- Some television channels add creative content like bringing physical objects to the studio to represent the content that they are included in the news broadcast. But this is not practical in all situations. For example, a problem associated with coconut industry the presenter can bring a coconut to the studio and explain. But in a problem associated with Covid 19 virus, they can't bring a Covid patient to the studio.

- If a statistical information needs to be shown to the views in understanding manner, they use different graphs such as pie charts, bar graphs etc. we have observed in last few months that some television channels (foreign and local) had difficulties of expressing the correct values in the charts that they have used.

References:

[1] Sri Lanka, N., 2020. *වට ප්‍රමාණය අනුව පොල් මිලදී ගන්න, පාරිභෝගික සමිති නියෝජිතයින් වෙළෙඳපොළට*. [video] Available at: < https://youtu.be/bmEKuHvCdmM?t=12 > [Accessed 22 January 2021].
[2] Jayaweera, D., 2020. *Bad Graph !!! Hope This Will Be Corrected By Ada Derana With An Apology ..* [image] Available at: < https://www.facebook.com/dilith.jayaweera/posts/10157995591750977 > [Accessed 19 April 2020].
[3] Channel Africa, e., 2020. *The Race 2020 | Details From The US Presidential Election*. [video] Available at: < https://youtu.be/NLl07fgpyH8?t=286 > [Accessed 22 January 2021].

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

This system we proposed is a human decision support system. With this system, the news technical operator can decide what is the most suitable attractive element that needs to be used according to the news. We are also focusing on improving the accuracy of the data visualization. With the experiences of watching daily news on television broadcasts, we thought that the attractiveness of daily news can be improved more. So, we researched to observe how television channels use technology to improve their attractiveness. We found that using technology for this can cost a huge amount. Therefore, we came up with a solution to make any television channel improve its attractiveness with less cost and workforce.

- We are planning to use Augmented reality as a main technical item to improve the attractiveness. We will be using simpler ways to use this technology so that anyone in the daily news generation team can use this for their daily news broadcasts with less processing time and cost.
- For the problems related to the representation of correct graphs we are using data visualization technology. Correct color themes will be identified with the given news alerts and representation of correct statistical graphs that any viewer of any social status can understand. These graph generation will be auto-generated so that the graphical designing team will not need much mathematical knowledge.
- As a first step to use this technology we will take images of the studio of these news broadcasting channels to analyze and identify the points which can be used as effective locations to place these objects. So, for this, we will be using point tracking technologies.
- Next is the object placement. This to be done after identifying the points in the diagram in which we can place the object appropriately. The object can be 2.5 dimensional. This method can improve the attractiveness of the news and the viewers of the news programs can listen to the news while enjoying the visual distribution.
- Another way of improving attractiveness is controlling objects using gestures. These can be done through gesture detection technology. Having gesture detection of hands and positions, we can easily manage the positioning of the objects according to the presenter of the news.

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

Our main objective is to increase attractiveness of daily news broadcasts. A simpler way that any television channel can do to improve their attractiveness of daily news broadcasts without spending much money and effort.

- By using Point Tracking technique, we can identify the points of an image.
- Object Placements can be used to place the object according to the points tracked of an image.
- Manipulate AR objects real time using Gesture Detection.
- Chart accuracy can be solved using data visualization. And the correct color theme of the graph according to the studio environment or the type of news will be assigned.

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	A. Vihanga Nivanrthana IT18091380

In this part, we are going to identify a mark on the studio's environment which is suitable for inserting a 3D object and 3D graphs, for that the user places a mark on a selected location in a particular frame and the system applies the same mark to all remaining applicable frames. For example, in a news setting, there is a table, we make a point on the table and we mark a point on the table. This point should stay the same despite different camera angles, movements, and multiple presenters. To make this happen, image point tracking can be used. Image point tracking detects two-dimensional planar images from a custom-defined target set, and then continuously tracks the images' locations and orientations to place objects we need. With this, you can place authored content based on the presence of a physical image. We can capture images taken from the studio and analyze the points using image processing techniques to track the points necessary to place objects. With these marks analyzed we can place the objects and continue with the object placement done next.

MEMBER 2	R.M. Bawantha Thilan IT18175080

After point tracking, we can identify the points marked and use these identified marks to place the imported existing object. If the points are marked on a table then that marked points are identified, and the object needed to that news item is placed on that marked points.
In this part, we do not create objects because we can find all the specific objects needed for a news broadcast.

The objects and the 3D graphs (created in the visualizing data section) generated will be embedded into the live feed of a news broadcast using this system through this part.
This object is added to a live video stream, not an image. Using a live streaming server, the object is placed to the marked points.

MEMBER 3	Wanigasekara.M.P.W.P.A IT18108514

Identifying the presenter's hand gestures and the presenter's location to place and manage the object accordingly. A gesture of the presenter is detected from the original images from the input devices to place the object. A live review of the object will be provided for the presenter as he/she moves their hands or changing their positions. Camera sensors can be used to detect the movements of the presenter.

In a stage, when the presenter moves their hand to the left, the object should also perform the specific task intended. Having such a performance in news delivery, can increase the number of viewers and grab the viewers' attention.
Unlike a radio delivery (voice delivery), in a television broadcast, we can use gestures, facial expressions, and movements to deliver the news more attractively. For example, to show a specific county and its location we can use a globe (3D object) and the presenter can use hand gestures to zoom the globe and show the location.

MEMBER 4	Gankanda G.M.J.U IT18063738

Automation of Data visualization will provide the advantage of simplifying large amounts of data into visually appealing and easily understandable for the public. With less time, less effort, and accuracy the graph creation can be done and shown in the studio. Pre-defined chart models will be given to choosing for the users. Then the user will be allowed to choose the graph (bar, pie, line) which is suitable for the news type and the statistical data. Then the user will be able to manage the X, Y, Z coordinates according to the data.

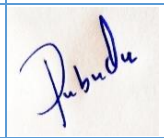
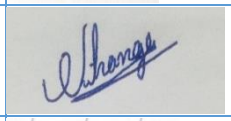
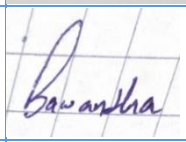
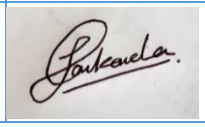
These graphs are then shown as AR objects in the news studio. These charts then can be shown as objects in the newsroom using object placement done through this research.
Attractiveness is another major factor aside from correctness. To achieve attractiveness, we can assign proper color themes to these graphs. The proper color theme is a very important factor for attractively broadcasting the news. A default (average) color theme which is suitable for the studio's environment color theme is suggested to the chart and an option is given to the user if that default color theme needs any other changers. The user can change it manually, for that, an opposite color pallet to the default color pallet is suggested to the user to select.

DECLARATION (Students should add the Digital Signature)

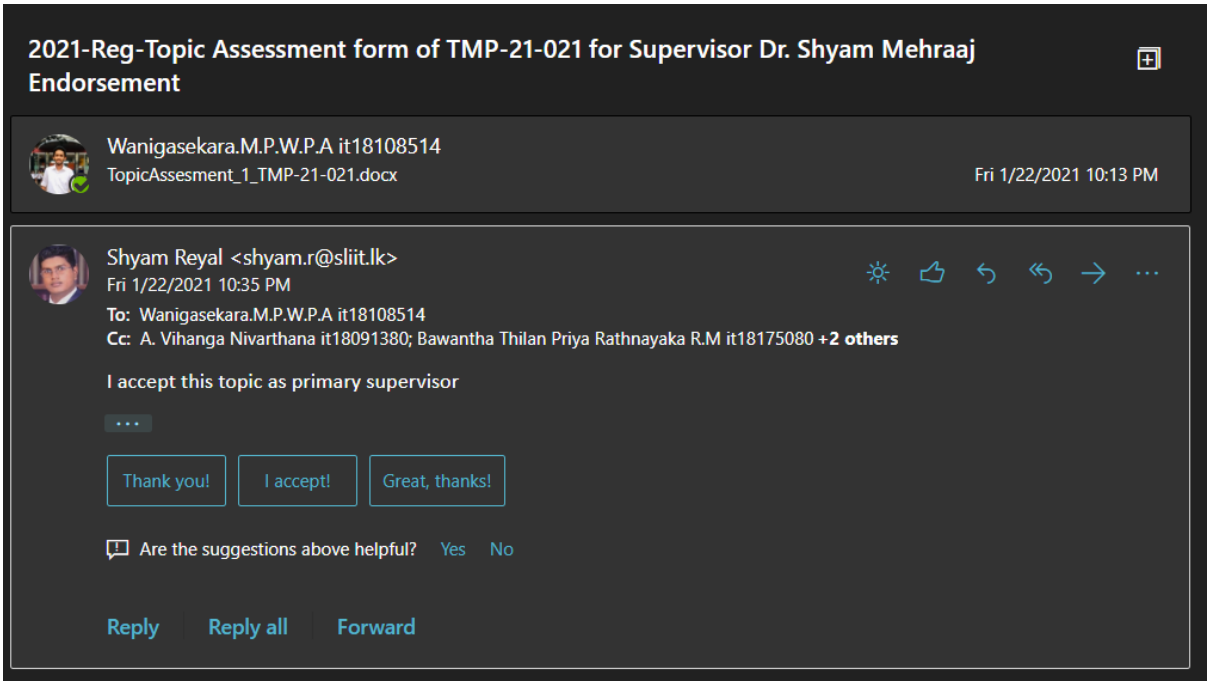
"We declare that the project would involve material prepared by the Group members and that it would not fully or partially incorporate any material prepared by other persons for

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	Wanigaasekara.M.P.W.P.A	IT18108514	
2	A.Vihanga Nivarthana	IT18091380	
3	R.M Bawantha Thilan	IT18175080	
4	Gankanda G.M.J.U	IT18063738	

Appendix 1 :



Appendix 2 :