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)	CCTV Based Enhanced Public Security Management System for Sri Lanka
RESEARCH GROUP **(as per the Topic assessment Form)**	Visual Computing
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	B.G.P. Sandaruwan	IT18043242	0773638063	it18043242@my.sliit.lk
2	A.S.S.B. Deshan	IT18028874	0711091084	it18028874@my.sliit.lk
3	D.H.M. Samaraweera	IT18046830	0714591088	it18046830@my.sliit.lk
4	Amanda Hemantha K.A. D	IT18078206	0714650695	it18078206@my.sliit.lk

SUPERVISOR Name	**CO-SUPERVISOR Name**
Mr. Kavinga Yapa Abeywardene	**Ms. Laneesha Ruggahakotuwa**
Signature	**Signature**
Attach the email as Appendix 1	**Attach the email as Appendix 2**
12/02/2020 **Date**	12/02/2020 **Date**

SUPERVISOR, CO_ SUPERVISOR Details

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)

CCTVs are often used as a method of surveillance in many situations. There are various studies and research has been conducted to examine a way to detect and identify objects, situations, behaviors with the use of Machine learning and Video processing technologies. Video processing research usually include detection, classification, tracking, event, and behavioral recognition. Machine Learning Algorithms can be used to train the systems to identify and recognize event and behaviors captured by CCTV surveillance. Current use cases for video analyzing include analyzing crowd behavior in public places, analyzing suspicious human behavior, Observation of traffic, moving target detection, Automatic people and object counting etc. Applicating areas for video analyzing can be identified as Traffic signals at junctions, Residential Areas, Religious Institutions, Inside public buildings, Store Complex, Parking Lots, Crowded places etc.

[1] Parakh, K. Sanaj, B. Nikhil, D. Pritam, A. Sanjay, and G. Ayush, “Abandoned Object Detection and Tracking Using CCTV Camera”. [Online]. Available: https://www.researchgate.net/publication/320932216_Abandoned_Object_Detection_and_Tracking_Using_CCTV_Camera. [Accessed: 04-Dec.-2020].

[2] B. Maaloul, A. Taleb-Ahmed, S. Niar, N. Harb and C. Valderrama, "Adaptive video-based algorithm for accident detection on highways," *2017 12th IEEE International Symposium on Industrial Embedded Systems (SIES)*, Toulouse, 2017, pp. 1-6, doi: 10.1109/SIES.2017.7993382.

[3] G. Mathur and M. Bundele, "Research on Intelligent Video Surveillance techniques for suspicious activity detection critical review," *2016 International Conference on Recent Advances and Innovations in Engineering (ICRAIE)*, Jaipur, 2016, pp. 1-8, doi: 10.1109/ICRAIE.2016.7939467.

Analyzing of surveillance videos in this proposed system contain the above stated research concepts of video processing and the process of classification of those identified situations of selected scenarios as normal or anomalous.

At present, Sri Lanka’s Crime Rate, Occurrence of traffic accidents, Traffic laws and regulation violation and other manmade disasters like fires rapidly increase due to high-speed urbanization and increasing population in urban areas. Currently, manual monitoring of CCTV surveillance footage after an incident is used as a method of investigation. Sri Lanka Police Lack proper methodology to detect above mentioned incidents real time to prevent/take necessary actions for them without affecting the countries’ security and wellbeing of the people is a weak point in the current prevailing security system of the country. This is a key point that shows the gap between usage of modern-day technology in the government, compared to the current system which involves a lot of manpower in identifying and analyzing those situations through established CCTV surveillance systems. Also, without people informing the security officials or through investigations, the Sri Lankan government does not realize those incidents are happening.

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

We are proposing the development of a real time automated surveillance system in public areas to detect above-described Occurrences of Fires, Traffic Accidents, Violation of Traffic rules, Criminal Behavior, and identification of those involved criminals at the exact time of occurrence to send alerts to the authorities. (Sri Lanka police).

CCTV footage data get directly uploaded to the system. Those footages get processed by video/image processing algorithms, Machine learning approaches and will detect critical incidents mentioned above if present. Incidents will be categorized into levels according to the severity in possible instances etc. Fires.

Regarding the availability of Data Sources:

We recently discussed about the availability of data with OIC of the Sri Lanka Police CCTV division and the Technical Head SI Mr. Suriyabandara and they agreed to provide us necessary CCTV footages and support for the research.

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

Main Outcome:
The main outcome of this system is to enhance efficient security service all over the country in an emergency.

Sub Outcome 1: Fire Detection.

Sub Outcome 2: Violation of Traffic Rules Detection.

Sub Outcome 3: Accident Detection.

Sub Outcome 4: Tracking Crimes scenes and Criminals.

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	**Fire Detection**

- **Identify the fire from smoke and flame which recorded in the videos.**
- **Categorize the fire according to the material which is burning.**
- **Categorize the level of fire and smoke.**
- **In real time the identified video, fire details and location will view in dashboard.**
- **The relevant part of the video of fire saved in the database.**

MEMBER 2	**Violation of Traffic Rules Detection**

- **Identify vehicle number that are violating the Traffic rule from analyzing video.**
- **Categorize the violation according to traffic lights and double line violation which are most common violation of traffic rules.**
- **In real time the identified video, vehicle number, and location will view in dashboard.**
- **The relevant part of the video of violation saves in the database.**

MEMBER 3	**Accident Detection**

- **Identify an accident from a damage or stopped vehicle in real time by analyzing the video.**
- **Identify the vehicle numbers, location, and the level of damage.**
- **In real time the identified video, vehicle numbers, level of the damage, and location will view in dashboard.**
- **The relevant part of the accident moment saves in the database.**

MEMBER 4	**Tracking Crimes scenes and Criminals**

- **Identify a crime or a riot in real time and identify the faces of criminals and violent people by analyzing the video.**
- **In the real time the identified faces and current location will be displayed in the dashboard.**
- **The crime scenes clip, and the recognized people's images save in the database.**
- **Identify the locations of those people from tracking down by several videos.**

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	B.G.P. Sandaruwan	IT18043242	
2	A.S.S.B. Deshan	IT18028874	
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4	Amanda Hemantha K.A. D	IT18078206	

Appendix 1:

Supervisor Endorsement:

Appendix 2:

2021-Reg-Topic Assessment form of TMP-21-197 for Supervisor Mr. Kavinga Yapa Abeywardene Endorsement Inbox ×

it18078206 Amanda Hemantha K.A.D 10:10 AM (17 minutes ago)
Sir, We completed the topic assessment form by adding the necessary details. We are looking forward to a reply for the supervisor endorsement. Thank You.

Kavinga Yapa 10:14 AM (13 minutes ago)
to CDAP, me

Dear All,

I confirm the supervision of this project.

Regards,

[https://drive.google.com/uc?id=1hfpbc-R0xlUQFDRrYmUYJNfjHyvw4bex]
[https://drive.google.com/uc?id=1ohhcToEBicegtJGxa-ITeJU4gwyAILUX]<http://www.sliit.lk> [https://drive.google.com/uc?id=0B2fe5q1mF06GVE9Ucnphd1I3dDg] <https://www.researchgate.net/profile/Kavinga_Yapa_Abeywardena> [https://drive.google.com/uc?id=0B2fe5q1mF06GQV9hUzV2UkxiTjA] <https://www.linkedin.com/in/kavinga-yapa-abeywardena-a1386361/> Kavinga Yapa Abeywardena, BSc (Hons) UK, MSc UK
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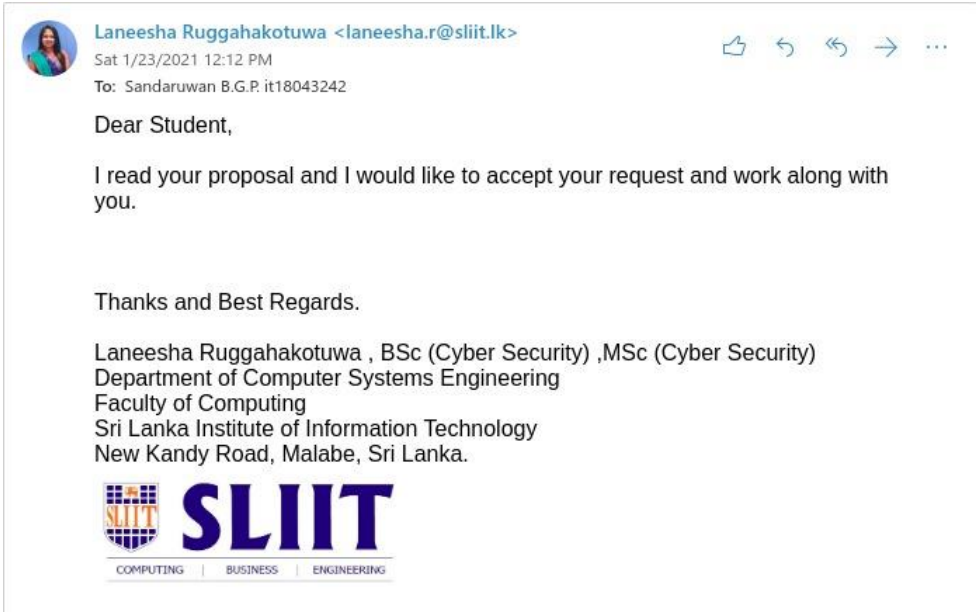
+94 76 90 45678

" The richest man is not he who has the most, but he who needs the least "

From: it18078206 Amanda Hemantha K.A.D <it18078206@my.sliit.lk>
Sent: Saturday, January 23, 2021 10:10 AM
To: Kavinga Yapa <kavinga.y@sliit.lk>
Subject: 2021-Reg-Topic Assessment form of TMP-21-197 for Supervisor Mr. Kavinga Yapa Abeywardene Endorsement

Co- supervisor endorsement:



Laneesha Ruggahakotuwa <laneesha.r@sliit.lk>
Sat 1/23/2021 12:12 PM
To: Sandaruwan B.G.P. it18043242

Dear Student,

I read your proposal and I would like to accept your request and work along with you.

Thanks and Best Regards.

Laneesha Ruggahakotuwa , BSc (Cyber Security) ,MSc (Cyber Security)
Department of Computer Systems Engineering
Faculty of Computing
Sri Lanka Institute of Information Technology
New Kandy Road, Malabe, Sri Lanka.

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