Sri Lanka Institute of Information Technology

PROJECT REGISTRATION FORM

(This form should be completed and submitted on 31st January and 1st February 2019 as per the schedule)

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	Smart Guardian
RESEARCH DOMAIN	Data Communication
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	K.D.Samarasinghe (GROUP LEADER)	IT16059214	0774019488	k.dineth@gmail.com
2	P.M.De Silva	it16041080	0774643599	pasandesilva3@gmail.com
3	T.U Mudalige	IT16102842	0769658808	thashi.umanga4@gmail.com
4	Gamage M.K.I	IT16105812	0763257508	kaviharimaheshi@gmail.com

SUPERVISOR

Dr. Pradeep Abeygunawardhana		
Name	Signature	Date

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

Name	Signature	Date

EXTERNAL SUPERVISOR (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:

Pools, lakes, ponds, and beaches mean summer fun and cool relief from hot weather. But water also can be dangerous for kids if parents don't take the proper precautions. Nearly 1,000 kids die each year by drowning.

It is the second leading cause of accidental death for people between the ages of 12 and 24.let's say your kid can swim well in warm indoor pool,however that doesn't mean that you will be able to swim in the ocean or lake.It is more dangerous than you thought.

One of the major problem faced by the country is floods.What if you can predict if and when a flood is happening and be prepared so when a flood is happening you'll be safe and sound.

Description of the Solution:

Introducing "SMARTGUARDIAN" which combination with two devices.

1. Wearable device to save your life in the water.
2. Floating device with flood detection for early warning and collecting sensor data transmitted by wearable devices and send them to server.

Wearable devices that allow us to measure the depth of water and it include self-health monitoring system to track physical conditions of the person by pulses.It provide wireless communication must be easy to wear, easy to carry, and comfortable.

Also an app will be created to get the alerts of and view required data processed on server.

Main expected outcomes of the project:

1.When a user with wearable device goes to a dangerous level of water he/she will be alerted by the device itself. And the lifeguard or a person who has the app in the area will be alerted.

2.If the heart rate is high or below the idle rate the lifeguard or the person who has the app will be alerted.

3.If there's a sudden flood situation occurs the person with the app or lifeguard will be alerted so people can take safety precautions.

4.If a person is in trouble (drowning or a critical condition) lifeguard or person with app will be notified and can be located since it's hard to identify such people when area is crowded.

WORKLOAD ALLOCATION (Please provide a brief description about the workload allocation)

MEMBER 1

- Design and Development of the waterproof wearable device
- Energy saving mechanism to save power
- Integrating communication modem transmitter part in the device
- An algorithm to determine the affected user condition inside server using the data taken from sensors of wearable device.

MEMBER 2

- Design and development of the floating device which receives a signal from a wearable device and converting it to an appropriate data type and sending it to the server.
- Algorithm to get the location of a device through floating devices.
- Making the mobile app that will be used by appropriate authority.
- Integrating communication modem receiver part in the device.

MEMBER 3 T.U Mudalige

- Server communication is based on end to end encryption to enhance the security to prevent interference from the third party
- Designing and developing an algorithm to determine the affected user condition then trigger the alert to nearby lifesaver's mobile device through mobile application.
- Designing and developing an algorithm to determine the flood detection and locate in which areas flood will increase, After that trigger the alert to the mobile application
- Exception handling of the server according to the server status.

MEMBER 4

- Design and Develop an underwater acoustic modem starting with the two main component which are Ultrasonic Transmitter and Receiver.
- The ultrasonic transmitter consists of three components. A frequency generator(40 kHz and ASK modulation),an amplifier(amplify the input single), and an ultrasonic sensor (transmits amplified signals).
- The ultrasonic receiver is consists of five components. An ultrasonic sensor (Receives the transmitted signals),an amplifier(Amplified the received signals),an envelope detector(detects the original signals from the amplified signals),and two comparators(once for removes the noise from the amplified signals and other one for transforms analog signals into digital signals).
- Use packet format in order to communicate.

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".

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