



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)	Personalized Application for Dementia patients in Cognitive Rehabilitation with Continuous Monitoring.
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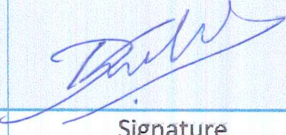
RESEARCH GROUP (as per the Topic assessment Form)	Artificial Intelligence and Machine Learning
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PROJECT NUMBER	2020-017	(will be assigned by the lecture in charge)
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PROJECT GROUP MEMBER DETAILS: (Please start with group leader's details)

	STUDENT NAME	STUDENT NO.	CONTACT NO.	EMAIL ADDRESS
1	Rathnayaka M.H.K.R. (GROUP LEADER)	IT16067370	0768913425	It16067370@my.sliit.lk
2	Manamendra M.G.	IT17119504	0702034291	It17119504@my.sliit.lk
3	Watawala W.K.C.R.	IT17096126	0772193614	It17096126@my.sliit.lk
4	Silva S.R.R.M.	IT17100076	0769437599	It17100076@my.sliit.lk

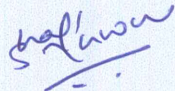
SUPERVISOR Details

Dr.Dharshana Kasthurirathna		13.01.2020
Name	Signature	Date

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

Name	Signature	Date

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

Dr.Chathurie Suraweera	Department of Psychiatry, Faculty of Medicine, University of Colombo	Department of Psychiatry, Faculty of Medicine, University of Colombo, Kynsey Road, Colombo 08.	0773694166	 13.01.2020
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)

Dementia is one of the most significant problems facing with the increase in the ageing population. The estimated current prevalence of dementia is 47.5 million worldwide [1]. This number will nearly double in every 20 years globally [1]. As well as the same problem has occurred in Sri Lanka. Dementia is basically a syndrome which can't be cured by medicines. According to the requirements of the doctors, the use of a brain training application could be better than medicine. There are number of brain training mobile applications in the world that could be useful to develop human concentration, attention and all sorts of brain activities but there isn't suitable mobile application for Sri Lankan culture because most of the dementia patients in Sri Lanka belong to the old generation and they are not proficiency with the English language and also the available current applications are not free and the users must pay a fee for using those applications. According to the resources, developing this application is an actual global requirement for dementia patients.

[1]Allianz Sri Lanka | Motor Insurance | Life Insurance | General Insurance. (2020). *Some facts about Dementia and Alzheimer's disease*. [online] Available at: <https://www.allianz.lk/articles/facts-dementia-alzheimers-disease/> [Accessed 21 Jan. 2020].

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

Personalized application will be implemented as a solution for the Dementia patients to overcome their difficulties face in their activities in the daily life, without help of any medical equipment. When doctor recommend the application, the caregiver can register the patient to the system. Then patient can continue with the game and activities level by level. The scores of these activities and games will be displayed in the profile of the patient, so caregiver can track the patient improvement. Also, the doctor can see the progress of the rehabilitation of the patient during the time they were at home, when they come for their appointment or clinic, by login to the system through the doctor's login. This will be great help for the patients and caregivers since there is no special medication for Dementia.

The application mainly focusses the Frontal lobe and Temporal lobe from the cerebral cortex, which are doing the corresponding functionalities such as

- * Attention and Concentration * Language
- * Executive Functions * Memory

According to the requirements of the doctor and the needs of the patients, the application will be consisting of games and activities which are in both Sinhala and English language. Implementation will be using reinforcement learning and voice to text communication. During the final stage, the developed application will be evaluate using sample patient group with the help of Consultant Psychiatric, National Hospital of Colombo. This application will be great help for the Dementia patients and at the same time little bit easy way to caretakers to handle their patients.

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

The main and the most important outcome of making Personalized Application for Dementia patients is to help those patients by giving rehabilitation in a cognitive way using different kinds of games or activities which will be implemented in this application with continuous monitoring.

- Decrease the mild and moderate stages of Dementia patients
- Reduce and save the cost for external caregivers
- Both patients and caregivers to make their life easier because there is not a special or exact medication for Dementia

WORKLOAD ALLOCATION (extract from the topic assessment form)

(Please provide a brief description about the workload allocation)

MEMBER 1

Rathnayaka M.H.K.R.

Dementia will decrease the Attention and Concentration which resulting in being distracted easily, difficulties in focusing, thinking or the processing takes longer than usual. Within this domain, a game will be implemented to increase the attention and concentration of the patients, bit at a time to a considerable level. Carrying out simple tasks will be increased in complexity, will be introduced to the patients with the game. The game will be very simple at the initial stage and level by level game will be started to change. This game will be implemented using the reinforcement learning, which helps to make the game more specific to each patient.

MEMBER 2

Manamendra M.G.

The main focus of this domain is to improve the Language based on the reading, writing, comprehension and communication skills of the Dementia patients due to the impairment of these skills will be caused to different kinds of Language problems in their day-to-day life. In here, voice to text communication component will be implemented for the activities or games like carrying out some commands, answering for given questions, recognizing pictures of this domain. Other domains of this application also will be included this voice to text communication component.

MEMBER 3	Watawala W.K.C.R.
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Executive functions include the ability to organize, use of proper judgement, plan and do a set of tasks in an effective way. Development of this domain will be helped to improve the effectiveness and speed process of executive functions. In this game, patient has to recognize the pattern or order of given set of numbers/letters and complete the order or pattern. Patient can start the game from the primary level and end of every level patient can see the scores that he/she earned. This game will be implemented using the reinforcement learning, which helps to continue the game more specific to each patient. At every level of the game, complexity of the pattern/ order will be increased and time duration for the given pattern/order will be decreased.



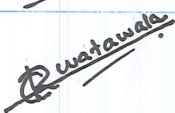
MEMBER 4	Silva S.R.R.M.
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The main emphasis of executing this domain is, develop a memory upgrade game for Dementia patients to principally enhance their memory. If further explain, there are three type of main aspects of memory, Registration, Recall and Recognition which is known as long term memory. Considering about the memory of the Dementia patients, implementation of the activities of this component is chiefly aim at above mention aspects. The game or activity will have two or multiple levels in it and in each level, patient should be covering all the aspects of the memory and these game activities will be implemented using the reinforcement learning.

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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