Sri Lanka Institute of Information Technology

PROJECT REGISTRATION FORM

(This form should be completed and submitted on or before 3.00 PM, Friday 3rd March, 2017)

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	Intelligent assistant for hearing impairers to interact with the society
RESEARCH GROUP	Computational Linguistics (AI)
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	S. Y. M. Perera (GROUP LEADER)	IT14029264	071 9139696	yasintha94@gmail.com
2	J. P. C. N. Jayalath	IT14114618	071 3162673	nelunikajayalath@gmail.com
3	W. Shenali Tissera	IT14106866	071 2994757	shenalitissera.c@gmail.com
4	A. M. O. P. Bandara	IT14076176	071 6086481	poornibandara14@gmail.com

SUPERVISOR

Dr. Samantha Thelijjagoda		
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

Mr. Indraka Udayakumara		
Name	Signature	Date

PROJECT DETAILS

Brief Description of your Research Problem:

- Hearing impairers communicate visually and physically rather than audibly. Many deaf people feel awkward or become frustrated trying to communicate with ordinary people, especially when no interpreter is available.
- When consider about deaf people in distance; there's no way to share emotions and feelings unless they meet each other.
- Deaf community discourage to be social. They do not have any desire to meet each other and share ideas.
- When following the day to day scenarios; deaf people unable to get any support from ordinary people since there isn't any common communication mode.

Description of the Solution:

Implementation of an intelligent, interactive assistant for hearing impairers to communicate and interact with the society that supports mobile platforms. User will able to interact with social networks such as Facebook messenger which is familiar with hard of hearing people.

- Text to Sign language translation – Text via Sinhala language and Singlish language.
- Translated sign language to Graphics Interchange Format (GIF) conversion.
- In the reply by deaf user; a 2D hand model with points, is there to send the relevant sign.
- Stickers and animated stickers for frequently used phrases by hard of hearing people.

  That would reduce the texting time and make communication much easier and efficient.
- Interaction with social networks such as Facebook messenger
- Voice output will be given once deaf user input sign language using 2D model where this mechanism supports to interact with ordinary people.

- Video call capability to make communication much easier.
- Games are proposed as a leisure time activities and an opportunity to learn sign language for people who are not aware of sign language.

Main expected outcomes of the project:

A Mobile application that support in Sinhala language to competent hearing impairers in the society.

Communication of hearing impairers can be done with either ordinary person or another hearing-impaired person without any difficulty. Emotions and feelings can be shared without meeting each other. Also, any support can be gotten from ordinary people very efficiently with the help of sign language to speech capability. User will be able to interact with social networks such as Facebook messenger which is familiar with hard of hearing people.

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

MEMBER 1

1) **Text to sign language conversion**

In creating Text to Sign language conversion the input text would be converted into Sign language. Input text can be either Sinhala or Singlish.

2) **Handling Sinhala API and Singlish API**

Identifying the input text as Sinhala or Singlish with the use of Sinhala API and Singlish API.

3) **Interaction with Chat application - Sanwadha**

Enable the user to interact with our application Sanwadha in sending the GIF message to another user with a level of high accuracy.

4) **Creating stickers and GIFs**

Creating basic stickers and GIFs for day to day life communication. Categorizing these stickers would be more user friendly. E.g.: - education, transport, foods, letters (Sinhala), numbers.

MEMBER 2

1) **Sign language to Graphic Interchange Format (GIF) conversion**

In creating Sign language to GIF conversion, the converted sign would be again convert into GIF. Creating GIF enables hearing impairers to identify the message more simply and effortlessly.

2) **Semantic Analysis and Machine Learning**

Identifying Semantic analysis would get the meaning of a set of words and convert that meaning into a GIF. Enable the user get the core idea of the message without having nonsense words.

3) **Interaction with Messenger API**

Enable the user to interact with Facebook Messenger in sending the GIF messages to another user with a level of high accuracy. Messenger is another most popular application by today.

4) **Creating stickers and GIFs**

Creating basic stickers and GIFs for day to day life communication. Categorizing these stickers would be more user friendly. E.g.: - education, transport, foods, letters (Sinhala), numbers

MEMBER 3

1) **Speech Recognition**

Creating the speech recognition module to identify the user's voice input (Sinhala) with maximum accuracy and convert it to a text file.

2) **Machine Learning Algorithm**

Creating adaptive speech recognition engine can evolve with the user interactions to increase the accuracy of the results.

3) **Speaker recognition**

Identifying the user on the user's voices and authenticate or verify the identity of a speaker as part of a security process.

4) **Creating stickers and GIFs**

Creating basic stickers and GIFs for day to day life communication. Categorizing these stickers would be more user friendly. E.g.: - education, transport, foods, letters (Sinhala), numbers.

MEMBER 4

1) **Creating 2D model**

Creating 2D model with animations enable the user to create his own signs using "Sanwadha" app and communicate with other side. Each finger having 3 points to finger and the hand would be more flexible in creating sign.

2) **Convert created 2D model sign to Text**

Created signs convert to meaningful text. Get full idea of the whole signs and convert it to a text to make interaction between ordinary people and hearing impairers.

3) **Creating stickers and GIFs**

Creating basic stickers and GIFs for day to day life communication. Categorizing these stickers would be more user friendly. E.g.: - education, transport, foods, letters (Sinhala), numbers.

4) **Offline messages**

Sending messages offline using mobile through "Sanwadha" app in the absence of internet facility. This would be another option to sending messages.

5) Learning sing languages

Learn sign language option would be more useful to the users who are willing to learn sign language. Give basic idea of Sinhala hand signs and meaning of them. Can practice signs using "Sanwadha" app "Learning signs" category.

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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