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 entail 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)	Brainy –A game-based e-learning application for preschoolers

RESEARCH GROUP **(As per the Topic assessment Form)**	(CIEC) E – Learning & Education

PROJECT NUMBER	TMP-22-218	(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	Fonseka D.W.L.K (LEADER)	IT19171234	0717429366	IT19171234@my.sliit.lk
2	Fernando S.M.J	IT19053592	0778341425	IT19053592@my.sliit.lk
3	Jayasundara J.M.I.S	IT19108582	0772918530	IT19108582@my.sliit.lk
4	Jayawardhana M.U.D	IT19063492	0766357833	IT19063492@my.sliit.lk

SUPERVISOR, CO_ SUPERVISOR Details

SUPERVISOR Name	CO-SUPERVISOR Name
Signature	**Signature**
Attach the email as Appendix 1	Attach the email as Appendix 2
Date	**Date**

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)

Today's kids are part of a generation that grew up with computers, tablets, and access to the internet. Major social problem is over the years, there has been a growing social discourse that kids should be kept away from technology to some extent. But it is a crucial as well as a negative step to take in today's fast-paced and technologically advanced world for children's welfare. Although, many e-learning systems including game-based applications have been developed to strengthen children`s minds and education. These apps do not appear to be up to date with existing technical features and these solutions remained the same for decade based solely on technology. Furthermore, since these e-games are bound to graphics alone, there is a shift away from physical activities, which are essential for children's brain development. However, kids are currently being taught things that they would not be exposed to daily in the real world with the use of 2d technology. However, this is limited to whatever the application's designers have included. Furthermore, although many apps are used to teach songs, words, and letters, they fail to evaluate the accuracy of the children's feedback/reactions to them, such as the pronunciation of the words. Therefore, there is a need for a design that can develop the mind of the child or enhance the education through a clear combination of technology and real-world activities.

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

Brainy is a game-based e-learning application for preschoolers. Since this application is created as a game, the solutions given to the above problems are created as game activities. Here four main problems which are described above in the problem description will be addressed separately throughout the four components outlined below.

Pose Detection - This component encourages the child to engage in physical activities. The child should interact with the activities of this component by using body postures and body gestures instead of using the touchscreens or keyboards of the devices. We hope to use a Pose Detection AI as the technology to identify these poses and gestures. The main objective of this component is to improve the child's gross motor skills and early mathematical concepts.

Augmented Reality(AR) – This allows kids to relive the excitement and experience something they've never had before or rare to have around their homeplace(e.g., Lion and Airplane) by replacing the existing world with a simulated one or virtual contents such as 3D Objects data into real world at real time. By using this technology (e.g., ARCore AI), kids can play and directly interact with 3D characters and objects with curiosity. This experience can assist kids in the development of skills, especially visual perceptual skills, as well as for memory and retention.

Mention clearly in this section that you are going to use the Mobile Phone's camera

Object Detection and Recognition- This component allows the child to identify any objects around their environment and recognize them without solely depending on content that is provided by the application developer. The child should use their knowledge of the objects to play activities in this component. For example, When the child is asked to show an object, the child should use the camera on the device and point to it. Through activities like these, the child becomes accustomed to learning exploratory without being confined. The main objective of this component is to improve the child's visual perceptual skills and memory.

Voice Recognition - This component helps kids to improve their pre-reading skills or other auditory perceptual skills on their own. The child does not need the help of parents to evaluate the reading or speaking skills with the use of this technology. The child must play the activities of this component using interactively with their voice. These activities range from spelling recognition, lyrics recognition when a child sings a song, counting recognition in mathematics and pronunciation recognition.

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

Main Objective: Implement a game-base e-learning application for kids(preschoolers)

Sub Objective 1: Pose Detection - Camera based physical activities of the child to improve gross motor skills and early mathematical concepts

Sub Objective 2: Augmented reality - Generating unique activities to improve visual perceptual skills and Memory of children

Sub Objective 3: Camera Object Detection and Recognition - To improve visual perceptual skills and Memory of children

Sub Objective 4: Voice Recognition - Provide various voice activated activities to improve Pre-Reading Skills or Other Auditory Perceptual Skills

WORKLOAD ALLOCATION (**extract from the topic assessment form after the correction suggested by the topic assessment panel.**)
(Please provide a brief description about the workload allocation)

MEMBER 1

Pose Detection Component

- Create an algorithm to randomly generate questions and answers.
- Create an algorithm to detect poses and get it as input to the system and compare.
- Create a database to store video and audio clips related to the questions.
- Design a tracker to detect face emotions.
- Create game activities based on pose detection technology to evaluate their mathematical skills, and other physical activities.

MEMBER 2

Augmented Reality Component
- Generating and Designing 3d objects and Game Characters based on the game storyline or chapters.
- Make inter connection between 3D models and other components to make game more interactive.
- Design and Develop activities which will be used to improve kids' visual perceptual skills. (Building Puzzles, Playing with AR characters, Sorting AR Objects)
- Developing the function that allows child to make their own character
- Make animations, Game models.

MEMBER 3

Object Detection and Recognition Component   Clearly mention that the camera is being used

- Create an object detection component using TensorFlow libraries.
- Make object recognition algorithm to recognize and describe objects to add on knowledge for kids to understand what they are seeing
- Create custom datasets to detect, recognize and track our own objects.
- Use OpenCV API for detecting common objects.

MEMBER 4	....

Voice Recognition Component
- Create voice-based game activities to develop kids' auditory perceptual skills such as word pronunciation, counting and singing a song with the use of voice recognition AI.
- Develop an algorithm to verify or evaluate the kids voice based activities answers and their feedbacks.
- Capture the child's voice using the device microphone and store in the database.

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 of 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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