

The background is a dark blue gradient. On the left, there are two overlapping geometric shapes: a blue parallelogram and a light green parallelogram. Below these, there is a circular inset showing a detailed, high-magnification view of a circuit board with various components and traces. In the top right corner, there is a faint, stylized pattern of interconnected lines and squares, resembling a circuit or a data network.

# English School Mate

2020\_069



Supervisor

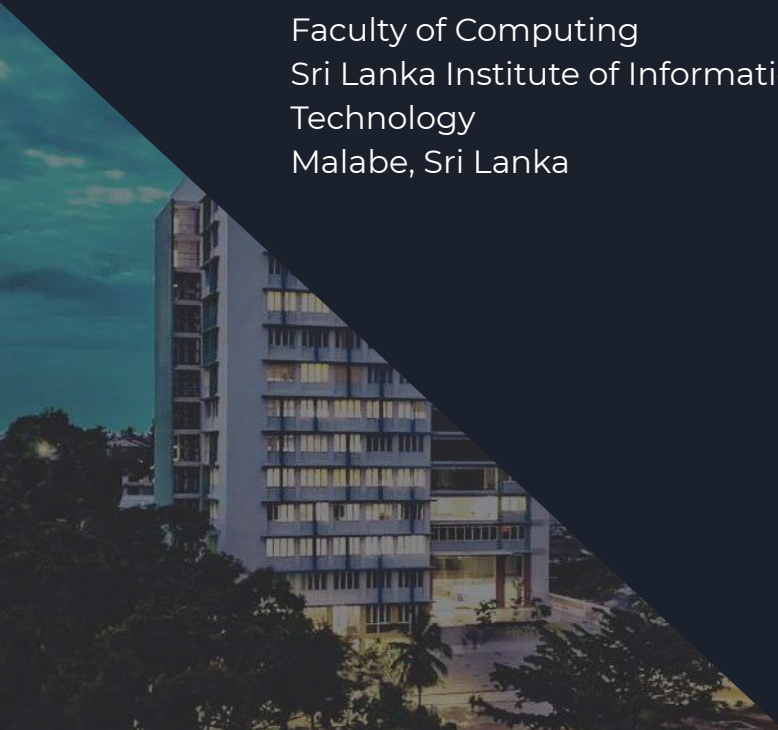
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## What is it ?

Comprehensive solution addressing today's problem of lack of English knowledge in rural areas' students.

- Brain Development Game
- Written English Module
- Spoken English Module
- Activity Prediction Controller Panel



# Understanding the Research Problem

01

There are students from rural areas whose English ability, brain development capacity, thinking ability are very low.

02

Many students faced lot of writing difficulties, errors of their grammatical skills.

03

Rural areas' students have a big issues of their English spoken skills with cope the society.

04

In rural areas there are few of teachers and teaching methods and there aren't a proper guide.





# Research Objectives

- English based Brain Development Game Implementation
- Written English Exercises and Correction model implementation
- Spoken English Exercises and Correction model implementation
- Teacher Dashboard Implementation
- ML model for predicting the score for written and spoken quizzes
- Portability
- User Friendly Interfaces
- Cost Effectiveness
- Lower Resource Consumption

# Target Audience

- Our product mainly target Sri lankan rural areas students who has lack of English knowledge and their guide.
- As well as this product can be used to any student who is willing to learn English.





# Main Implementation




# Authentication



- Implemented using Firebase Authentication
- Sign-in screen
- Navigation Drawer update
- User profile picture functionality should be added

# Authentication Interfaces

15:25 4G 48



ENGLISH MATE

Email

First Name

Last Name


Date of Birth

Password

Confirm Password

SIGN UP

15:25 4G 48



ENGLISH MATE


Email

Password

SIGN IN

SIGN UP

15:29 48



Smart Student  
smartstudent1454@gmail.com

Sign Out

# Backend and Database

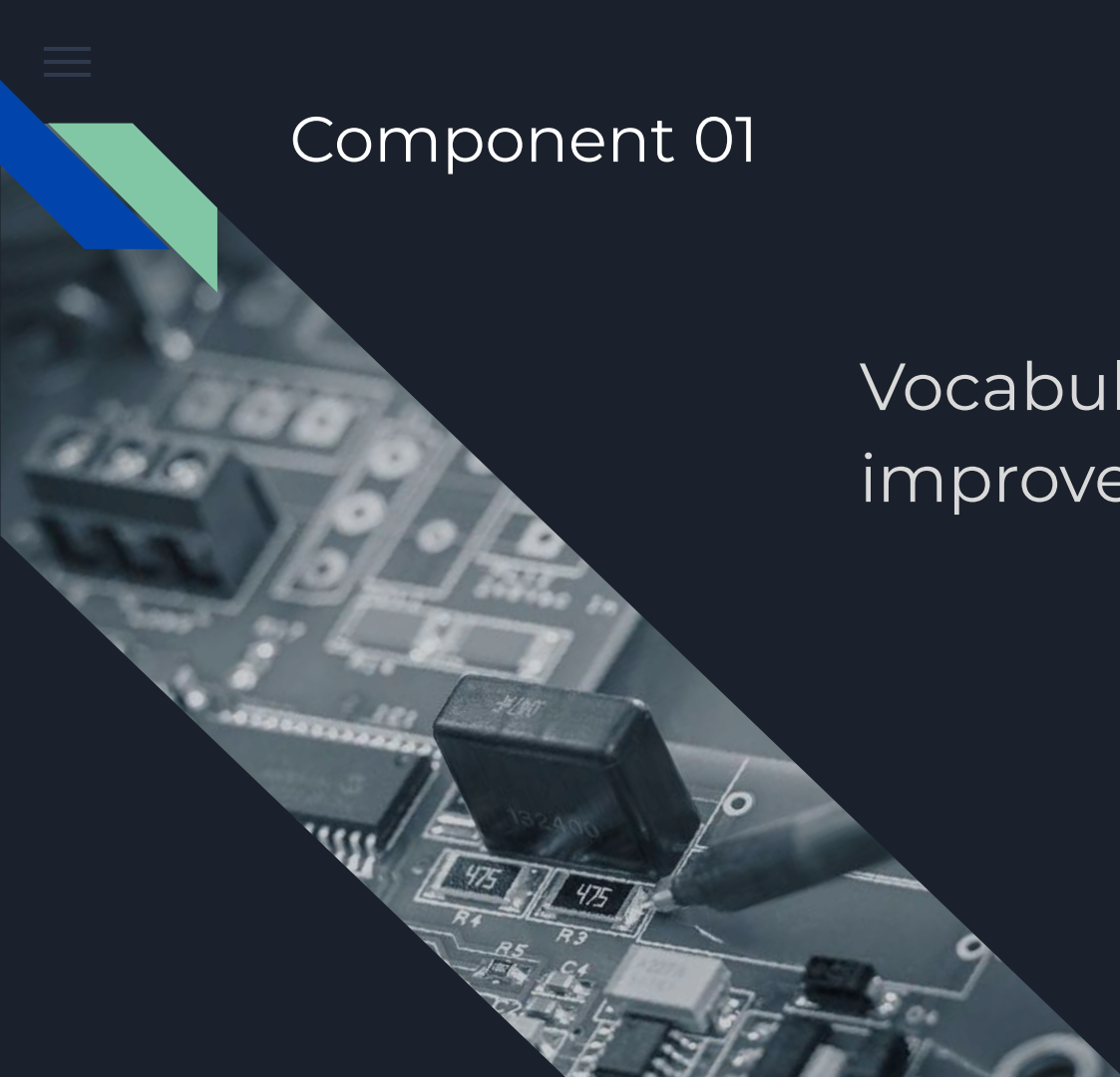
- Implemented as a REST API using Java Spring-Boot and MongoDB as the DB
- CRUD endpoints for written and spoken questions are implemented
- All the analyses of the question results will be performed here





# Component 01

Vocabulary skill and Brain  
improvement Game



# Research Methodology and Where am I now

- Implement using Android Studio and Unity3D.
- Since the logical complexity is high in each level, it is required to test the accuracy and the performance of both the methods.
- Upto now the levels are finalized and the implementation of Android Studio based method is started.

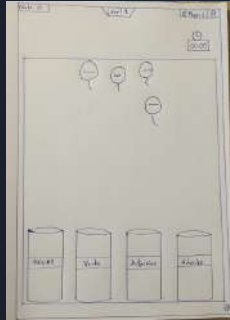




# Game Overview

- The plan is to implement a game with 4 levels with different activities.

01



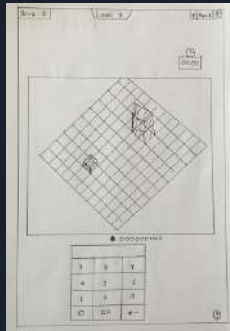
Word categorization

03



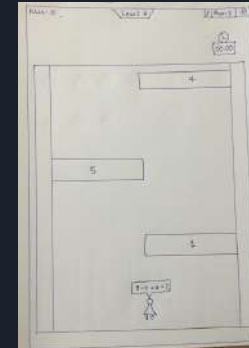
Words match puzzle

02



Counting the cubes

04



Solve equations



## Component 02

# Written English Module





# Research Methodology and Where am I now

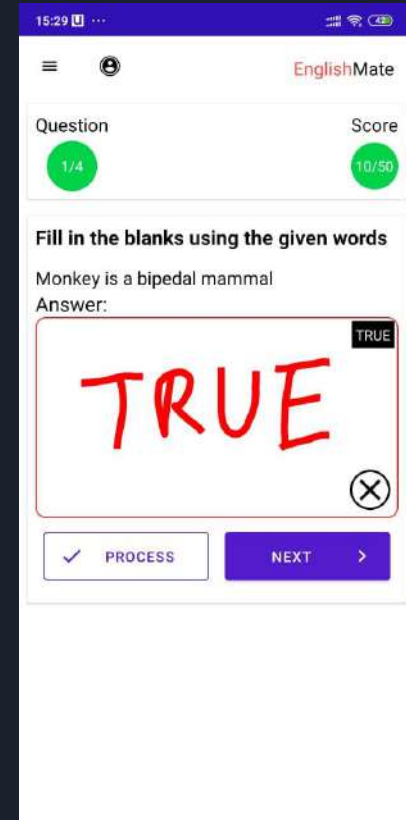
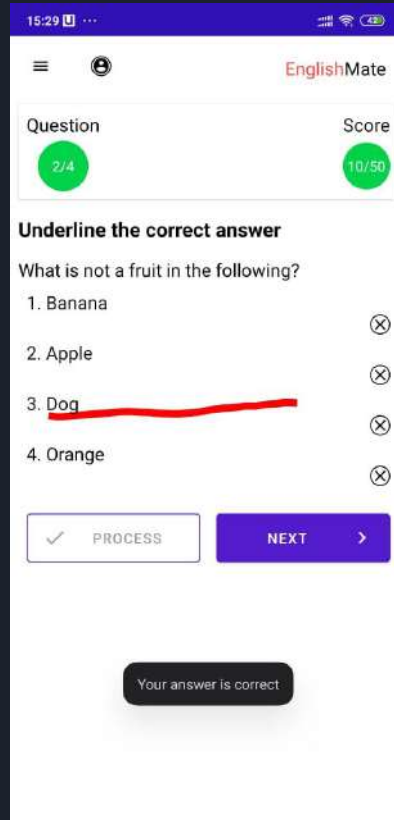
- Questions will be stored on a remote database and fetched through HTTP calls.
- Users will be able to see their progress, rank, scores and other statistics for written quizzes.
- Implemented using Firebase ML vision and a custom drawing canvas.
- The casual flow of handwriting recognition and answer validation,
  - User draws on custom canvas
  - If the user does not draw for 1s recognize it as break
  - Get the bitmap from canvas
  - Provide bitmap as input to the detector
  - Display text
  - Compare the recognized text with the correct answer of the question



# Research Methodology and Where am I now

- Scores and question numbers will be displayed per question
- Implemented Question Types
  - True-False
  - Underline
  - Fill in blank
- Questions are organized into lessons and a lesson will contain questions of all the types [may be changed into one lesson containing questions from only one type]

# Interfaces related to Written Module





# Component 03

## Spoken English Module





# Research Methodology and Where am I now

- Questions will be stored on a remote database and fetched through HTTP calls.
- Users will be able to see their progress, rank, scores and other statistics for spoken quizzes.
- Implemented using Google speech recognizer.
- The casual flow of speech recognition and answer validation
  - User click speak button
  - Google speech recognizer module is configured to identified English and launched
  - User speak and Google speech recognizer capture the audio
  - Google speech recognizer process audio and output the identified text
  - Identified text is displayed to the user
  - Identified text is compared to the original text and marks are calculated



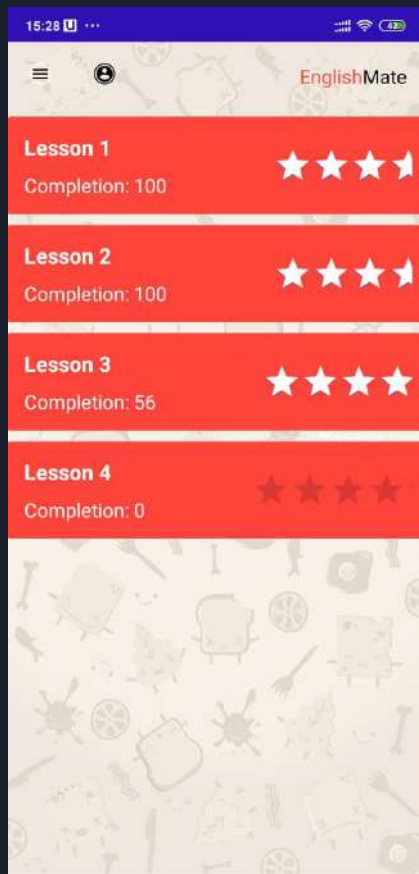
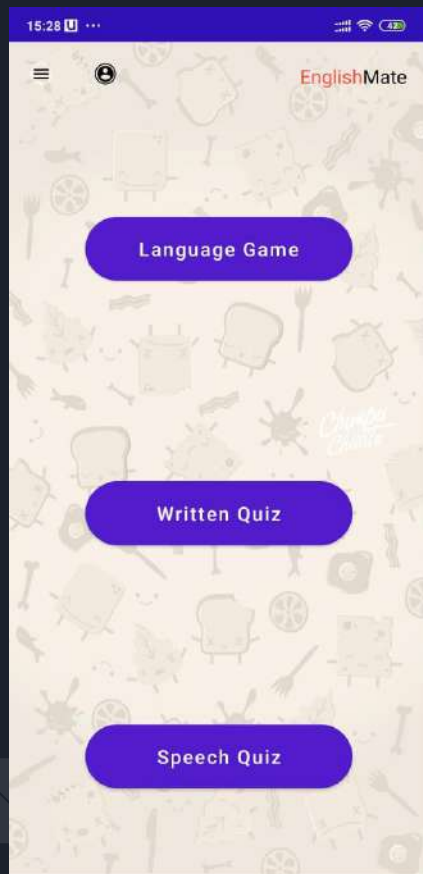
# Research Methodology and Where am I now

- Scores and question numbers will be displayed per question
- Implemented Question Types
  - English conversations (Dialogues)
  - Matching with readings (Pronunciations)
  - Poems
  - Model Speeches
- Questions are organized into lessons and a lesson will contain questions of all the types [may be changed into one lesson containing questions from only one type]





# Interfaces related to Spoken Module



## 1. Simple Present Tense-positive: Repeat the sentences.

Please use a headset for maximum accuracy. Press the START button, then read the specified sentence clearly. Press DONE when you are done speaking. Wait 2-3 seconds after pressing START, before pressing DONE, and between sentences.

1. Please say  I come home. You come home. He comes home. She comes home. We come home. They come home.

You spoke:



Start



Retry

## 2. Vocabulary Practice: Repeat the sentences.

Please use a headset for maximum accuracy. Press the START button, then read the specified sentence clearly. Press DONE when you are done speaking. Wait 2-3 seconds after pressing START, before pressing DONE, and between sentences.

1. Please say  Is Charles a pilot? Yes, Charles is a pilot for Air France. He flies big planes.

You spoke:



Start



Retry



## Component 04

Activity Prediction  
Controller Panel





# Research Methodology and Where am I now



## Teacher Dashboard

- Will contain information on the overall performance of a set of students assigned to the teacher.



# Research Methodology and Where am I now

ML model for predicting the score/activity for written and spoken quizzes

- Data collected through Google Forms
- Data Cleaning and Dataset Creation
- Data preprocessing and developing a model using Jupyter notebook as the IDE
- Sklearn and pandas libraries will be used for models and utilities needed for data preprocessing, training models, model evaluation



# Data collected form

## English School Mate

This questionnaire will be used to gather data for 4th year research project "predict the lessons for grade 6 students from student basic environment factors " at Sri Lanka Institute of Information Technology (SLIIT) and survey to measure the knowledge of the students. your answers will remain anonymous and we will use the responses to improve the feature of our proposed application.(to be filled by the students who are in grade 5, their parents or teachers)  
thank you for your time.

1. What is your Full name?

Short answer text

2. What is your Hometown?

Short answer

3. Current Living town ( Mention your Hometown if not migrated )?

Short answer text

4. What is your School?

Short answer text

5. What is the District of your School?

1. Ampara

2. Anuradhapura

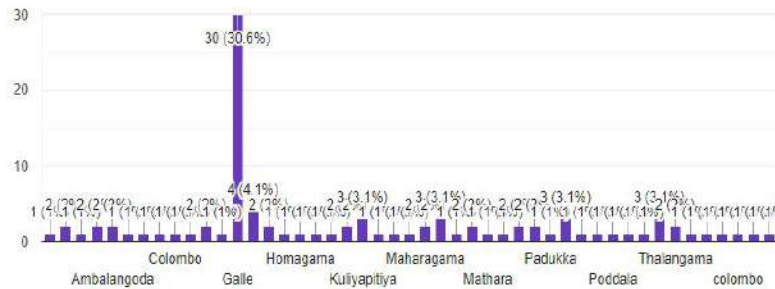
3. Badulla

4. Batticaloa

5. Colombo

### 3. Current Living town ( Mention your Hometown if not migrated )?

98 responses



### 4. What is your School?

117 responses

Newstead girls' college

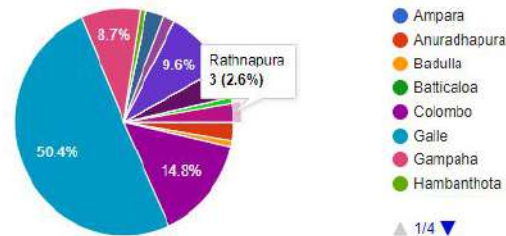
St. Theresa primary school

Dharmasoka college

Meenawala Amarasooriya college

### 5. What is the District of your School?

115 responses

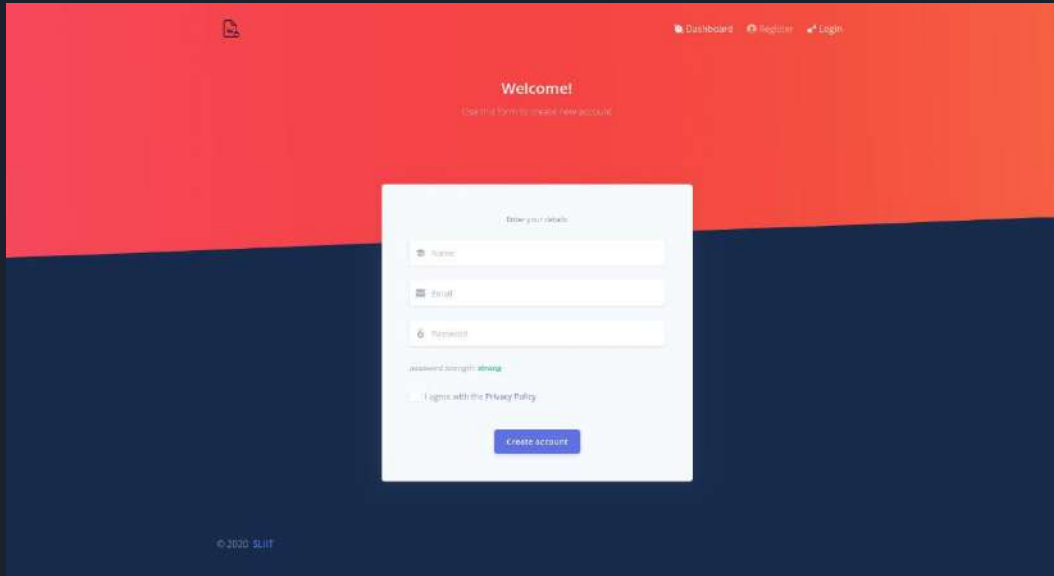


### 6. Do you have an English period at school?

116 responses



# Interfaces related to Activity Prediction Controller Panel



The registration form is centered on a white background with a red header and a dark blue footer. The header contains a document icon, a hamburger menu icon, and links for Dashboard, Register, and Login. The main content area has a 'Welcome!' message and a link to 'Use this form to create new account'. The form itself is titled 'Enter your details' and includes fields for Name, Email, and Password. A password strength indicator shows 'password strength: strong'. There is a checkbox for 'I agree with the Privacy Policy' and a 'Create account' button. The footer contains the copyright notice '© 2020 SLIT'.

Document icon

Dashboard Register Login

Welcome!

Use this form to create new account

Enter your details

Name

Email

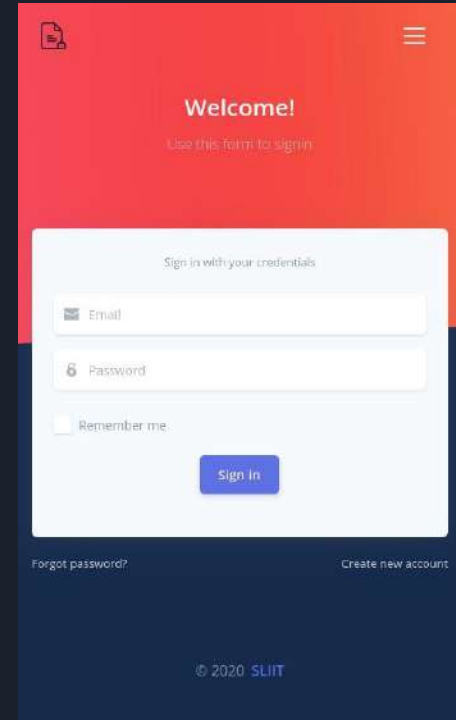
Password

password strength: strong

☐ I agree with the Privacy Policy

Create account

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The login form is centered on a white background with a red header and a dark blue footer. The header contains a document icon and a hamburger menu icon. The main content area has a 'Welcome!' message and a link to 'Use this form to sign in'. The form is titled 'Sign in with your credentials' and includes fields for Email and Password. There is a checkbox for 'Remember me' and a 'Sign in' button. At the bottom, there are links for 'Forgot password?' and 'Create new account'. The footer contains the copyright notice '© 2020 SLIT'.

Document icon

Welcome!

Use this form to sign in

Sign in with your credentials

Email

Password

☐ Remember me


Sign in

Forgot password? Create new account


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# Commercialization For Entrepreneurship

- 
- Absence of a single hybrid solution for written and spoken English training aligned with local market
  - Portable
  - Lower Resource Consumption
  - Upgradeable
  - Scientifically proven Barin Development techniques
  - Minimum Operational Knowledge
  - Higher User Interactivity





Thank  
you!





# Q & A