INTERACTIVE LEARNING FOR KIDS

2022-254

TEAM

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CONTENT

INTRODUCTION

- Education is the most important thing in this competitive world.
- Primary education is base of the education.
- We identified some key features that can improve the knowledge of students at primary schools.
  - Shapes
  - Letters
  - Images
- This study takes care of these problems with specific instruction.
- Within the above-mentioned feature's base of education of students will be strong.

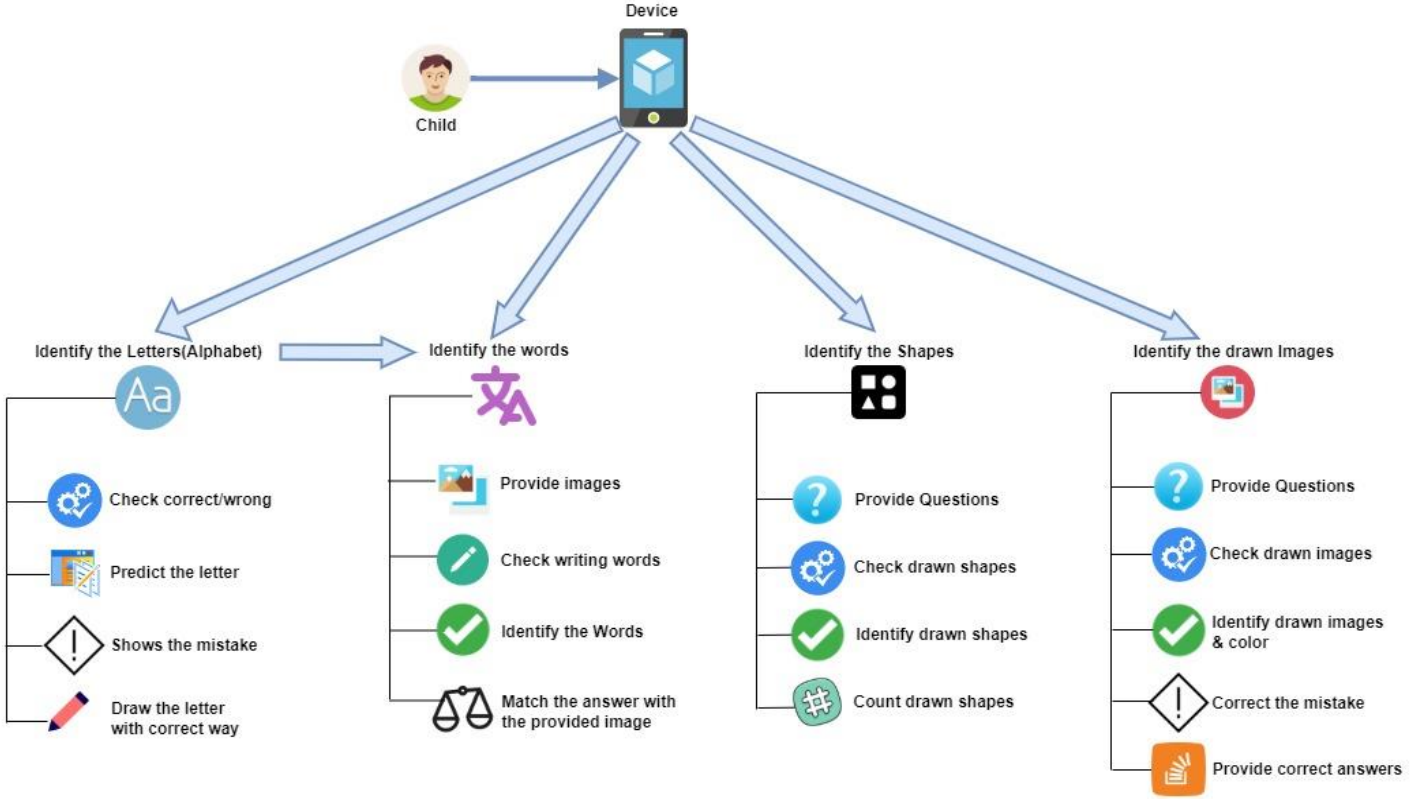
SYSTEM OVERVIEW

- Teach students letters efficiently.
- Improve the ability to draw images.
- Increasing Knowledge of shapes.
- Improve the ability to identify features in images.

OBJECTIVES

- Identify hand-drawn letters, predict the letter if it is incomplete, and suggest corrections if the drawn letter is wrong.
- Recognize hand-drawn images and suggest corrections if drawing is wrong.
- Identify hand-drawn shapes and recognize arts drawn using shapes.
- When image is provided identify that image and features in that provided image.

OVERALL SYSTEM DIAGRAM



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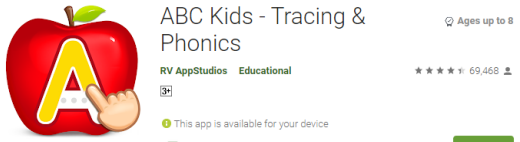
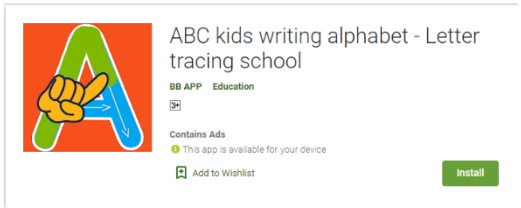
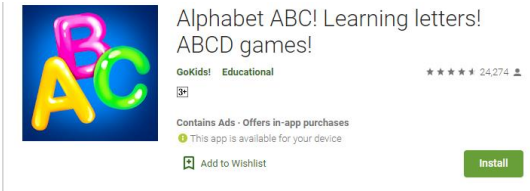
INTRODUCTION

- Kids can learn how to draw much more quickly with the help of letters. At a very young age, kids learn to recognize alphabet letters through charts, toys, or by being taught at playschool.
- Drawing becomes interesting and easy to understand when introduced with alphabets.
- Drawing is very important for young children. Drawing improves wrist movement and hand-eye coordination, which will make writing letters and numbers easier later.
- In this part we will identify the draw alphabet letter in the mobile device using real time processing.

RESEARCH GAP







- Most of hand drawn alphabet related application are very similar each one.
- Most of Researchers identify the letter by given alphabet.
- In this study, looking forward to detect the hand drawn letters with no specific given images and predict the letter when incomplete the letter.
- Identify the mistakes.

COMPARE EXISTING SYSTEM & RELATED WORK

Application	Drawing Pattern	Mistake Identify	Predication	Correction
ABC Kids	Image drawing	✗	✗	✗
ABC Kids writing alphabet	Image drawing	✗	✗	✗
Alphabet ABC	Image drawing	✗	✗	✗
Learn ABC alphabet	Image drawing	✗	✗	✗
Proposed Application	Given area	✓	✓	✓

RESEARCH PROBLEM

- No existing application for hand-drawn alphabet by given area.
- Not given any predication to letters when incomplete.
- No identification method to identify the mistakes of the letter.
- When kids did mistakes, there is no application to correct that mistake letter.

METHODOLOGY

Hardware Requisites

- Our basic plan is to implement the application operating on an Android device with a drawing platform
  - Mobile Phone

Technologies to be used

- Android
- Node JS
- AWS / Google Cloud Storage
- Python
- TensorFlow

KEY PILLARS & RELEVANT TECHNOLOGIES

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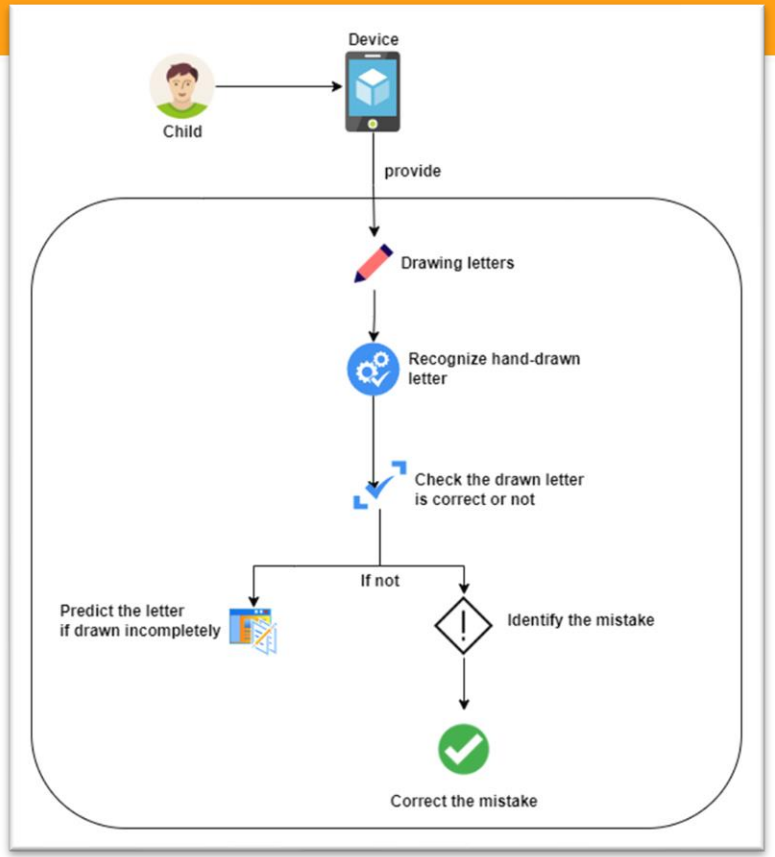
KEY PILLARS & RELEVANT TECHNOLOGIES

Neural Network

SYSTEM DIAGRAM



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USER REQUIREMENTS & FUNCTIONAL REQUIREMENTS

Functional Requirements

- Recognize hand-drawn letters.
- Predict the letter if the student draws the letter incompletely.
- Identify mistakes done by the student when drawing the letter and suggest solutions.

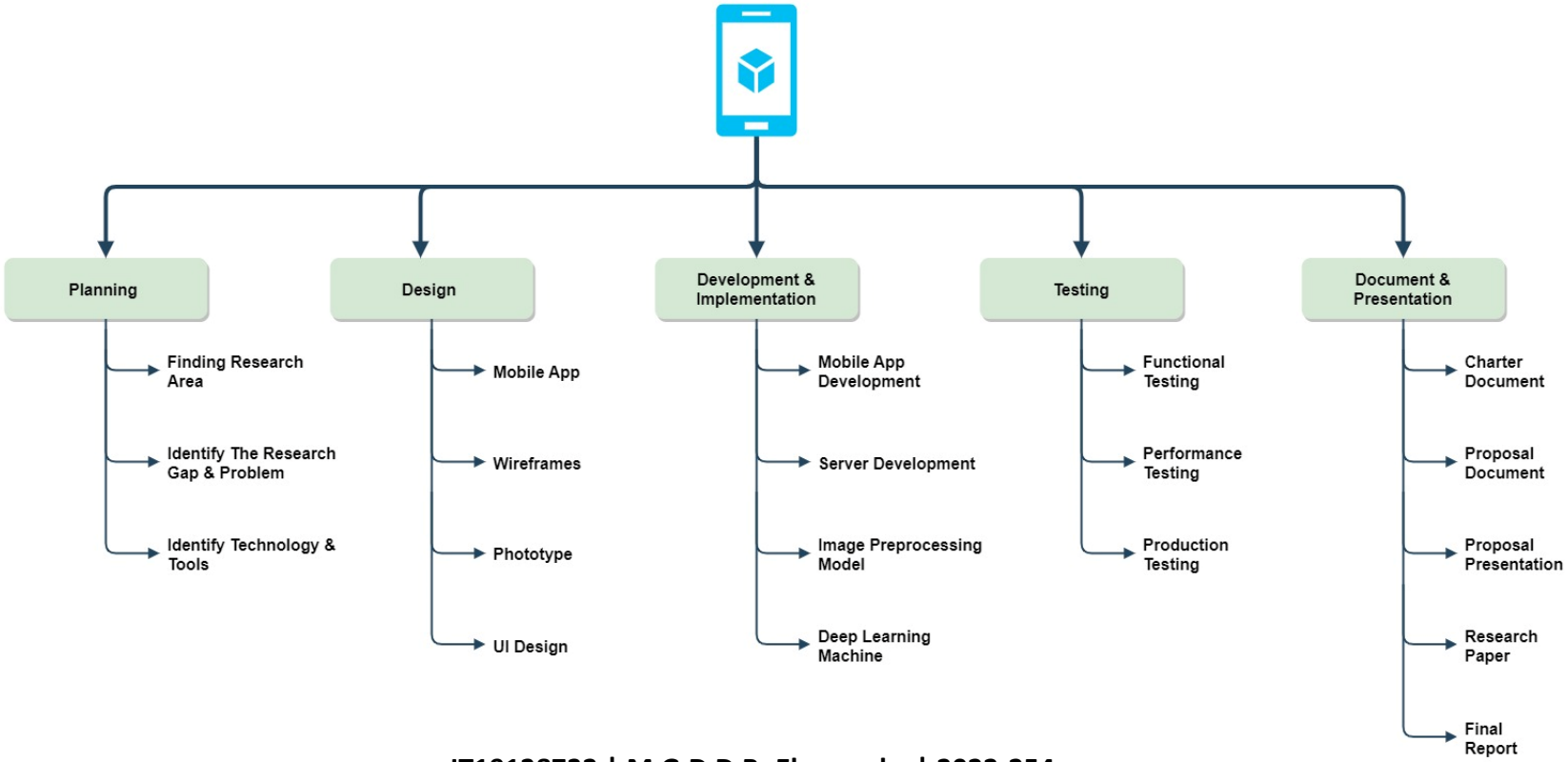
User Requirements

- User friendliness.
- Provide solutions to improve knowledge of writing letters.
- Facilitate to quick response.

SPECIFIC & SUB OBJECTIVES

- Recognize hand-drawn letters.
- If the students draw the letter incompletely predict the correct letter.
- Identify mistakes that are done by the student when drawing letters.
- Provide corrections for identified mistakes.

WORK BREAKDOWN STRUCTURE



GANTT CHART

Tasks	November (2021)	December (2021)	January	February	March	April	May	June	July	August	September	October	November	December (2022)
Feasibility Study														
Identifying the Opportunity														
Evaluate feasibility and background study														
Environment setup														
Requirement Gathering														
Topic Evaluation														
Literature Review														
Requirement Analysis														
Project Proposal														
Proposal Document														
Proposal Presentation														
Software development Identifications														
Identifying functions														
Making documents														
Software design														
Application design														
Database & server implementation														
Implementation														
Testing														
Final presentation & Viva														
Final report(group)														

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Introduction

- In current education system normally all the modules and syllabus are made for physical environment.
- And primary level education based on teach under proper supervision.
- A situation like pandemic (Corona) or if mentor would not be able to supervise that children's it will not good for them
- And sometimes current Sri Lankan education system teacher is not able to manage all class room students at once

    - Those facts are bring this idea

Background/Research Gap

- **Image content identification**.
- That’s why those activities are familiarizing in basic **childhood syllabus**.
- Until today that supervision is **fully manual process**
- If child will have to use method like **distance learning** it will be not effective on their knowledge

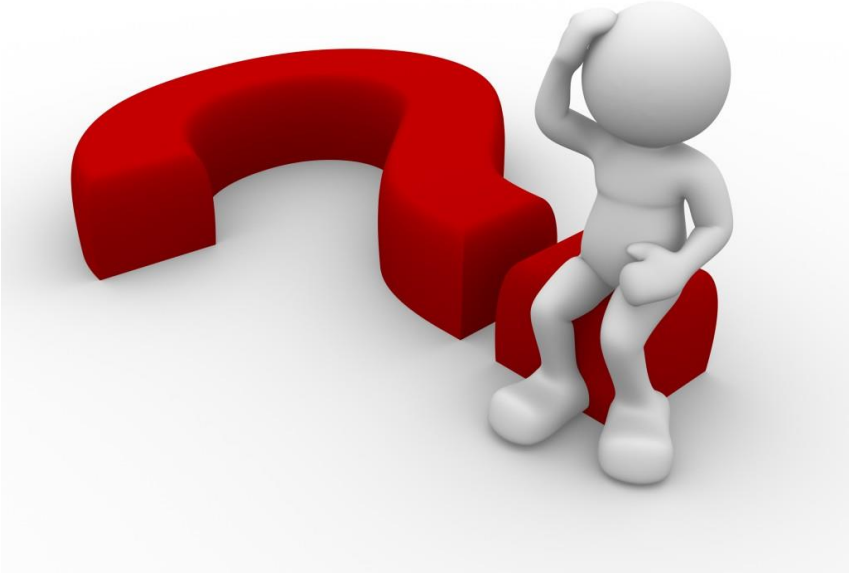
Research Gap

Existing Product Comparison

Platform	Image Caption Generation	Written Text Identification	Make Evaluation process via computer
text.imageonline.co	NO	NO	NO
coolgenerator.com	NO	NO	NO
Our System	YES	YES	YES

Research Problem

- In primary level student has **developing brain** and most of the time the primary education **base on give to proper understanding** to children about some **basic in our knowledge system,**
- Most of our learning base on some **image understanding** and **context writing**
- In childhood that stage must follow by under any proper **supervision**, If not children will be learning some wrong staff.
- There is **no any automated** way to track or monitor mentioned problem
- So that is the reason world needs some **automated monitoring system** to teach primary students.



Specific and Sub-Objectives

- **Identify uploaded image and generate caption on image compare with student given answers**

  - Identify the image details and generate caption
  - Identify the student answer on writing board.
  - Evaluvate those two text and give the result

Research Methodology

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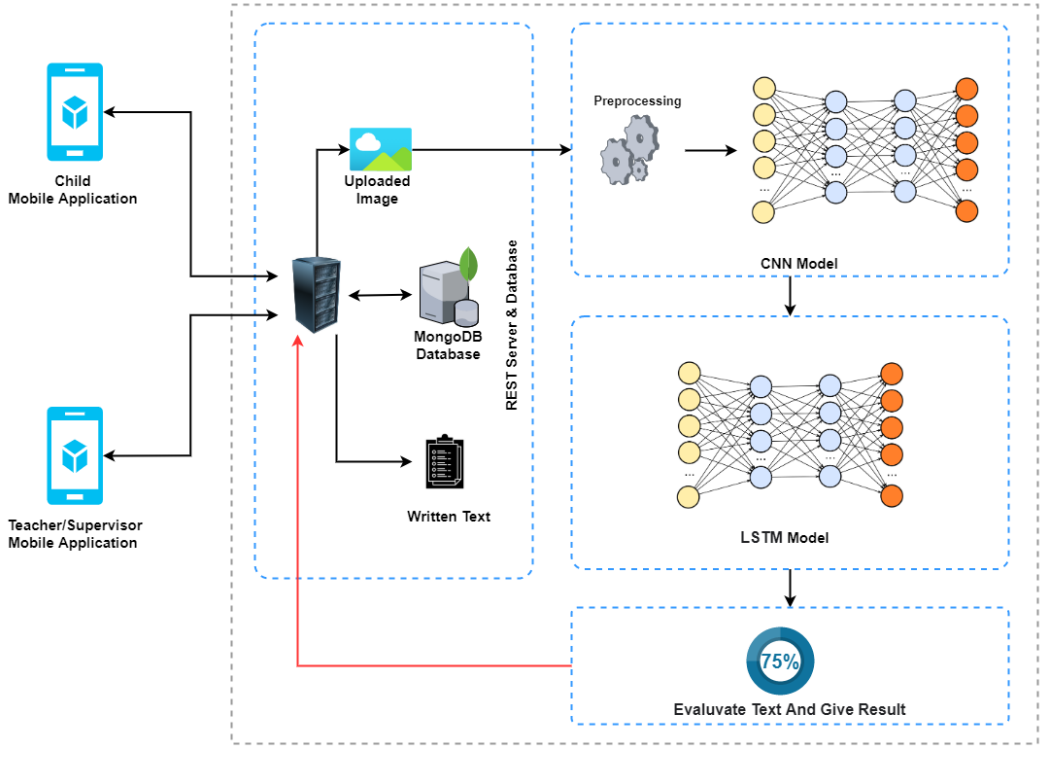
System Diagram

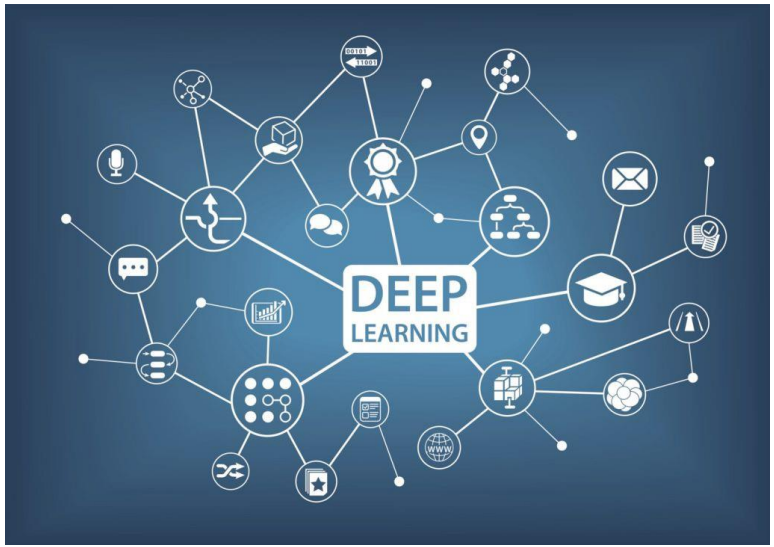


Technologies

- Android
- Node JS
- Python
- AWS or Google Storage
- Jupyter Notebook

Key Pillars

Techniques of Key Pillars

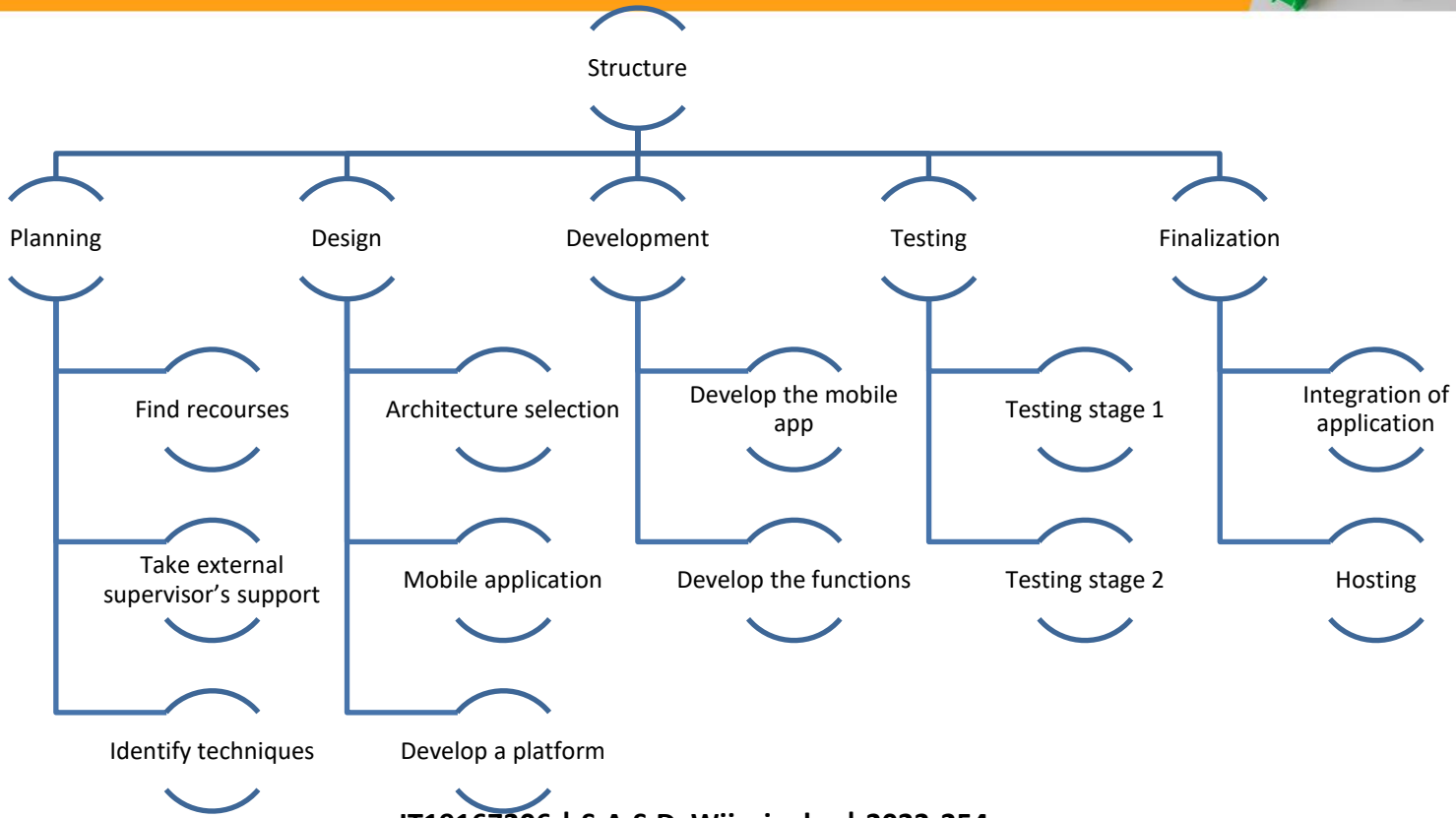


- Deep Learning
  - Neural Network
    - CNN
    - LTSM

Requirements

Functional Requirements	Identify hand drawn shape
	Count number of drawn shapes
	Identify an art drawn using shapes
User Requirements	Mobile device
	Internet Connection
	Smart Pen (Optional)
Non-Function Requirements	Reliability
	Scalability
	Performance

Work Breakdown Structure



Grant Chart

	Task Name	December	January	February	March	April	May	June	July	August	September	October	November
1	Research Topic Selection												
2	Topic Registration												
3	Project Charter												
4	Study on Research Area												
5	Project Praposal Repoart												
6	Project Praposal Presentation												
7	System Design and Planing												
8	Implementation of function												
9	Intergratoin Level												
10	Testing Level 1												
11	PP1												
12	Research Paper												
13	Implementation												
14	Testing Level 2												
15	PP2												
16	Production Testing												
17	Field preparations and digging												
18	Final Presenation												
19	Final Report												
20													

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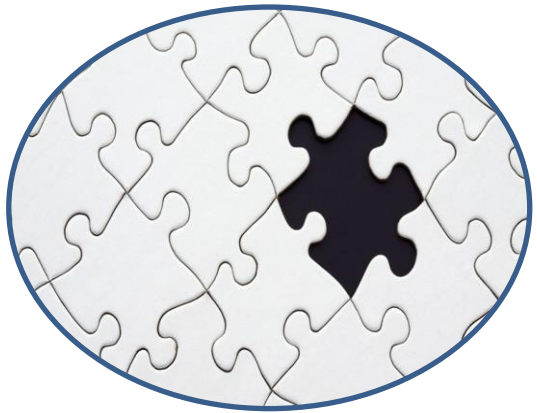
INTRODUCTION

Research Gap

Platform	Identify hand-drawn shape	Count the drawn shapes	Identify an art drawn using shapes
Nursery App	✗	✗	✗
Early Learn	✗	✗	✗
Using Fuzzy Logic to Recognize Geometric Shapes Interactively	✓	✗	✗
Sketch Recognition with Natural Correction and Editing	✓	✗	✗

Background/Research Gap



I am going to build a smart shape and counting learning method. The specialty and novelty of this method is students can draw a shape of their tablet and then the system will identify the drawn shape and suggest corrections if needed. Below functionalities also will include in this method.

- Identify the number of shapes drawn by the student.
- Identify an art drawn using shapes by the student.

Research Problem

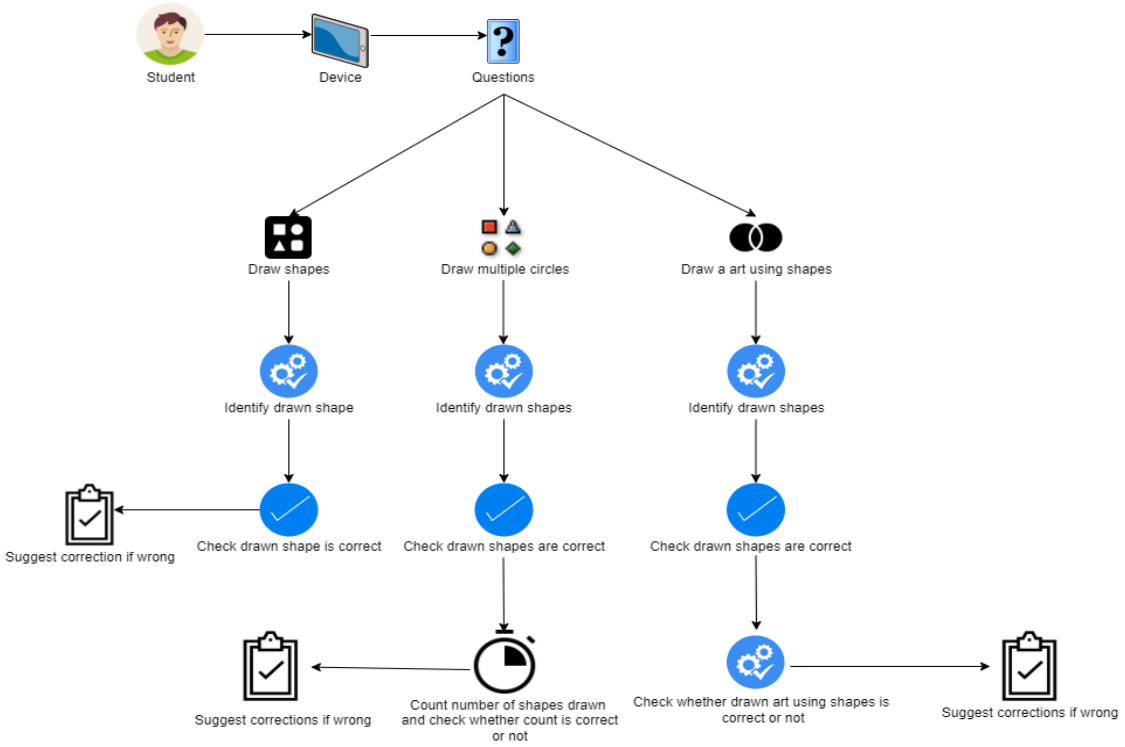
- Students' mind of primary education is very sensitive. If they think that some learning is hard to do and I can not do this, that learning will never be easy for the students.
- Mental problems can be affected for students because of hard teaching methods.
- There are very short amount of application in the world that can identify hand drawn shapes.
- Primary age children's mindsets are willing to study with the drawing and pictures. But there is no better method to do that.

Specific and Sub-Objectives

- **Identify hand drawn shapes in their tablets by the students.**
  - Count number of shapes drawn by the student.
  - Identify an art drawn using shapes by the student.

Research Methodology

System Diagram



Technologies

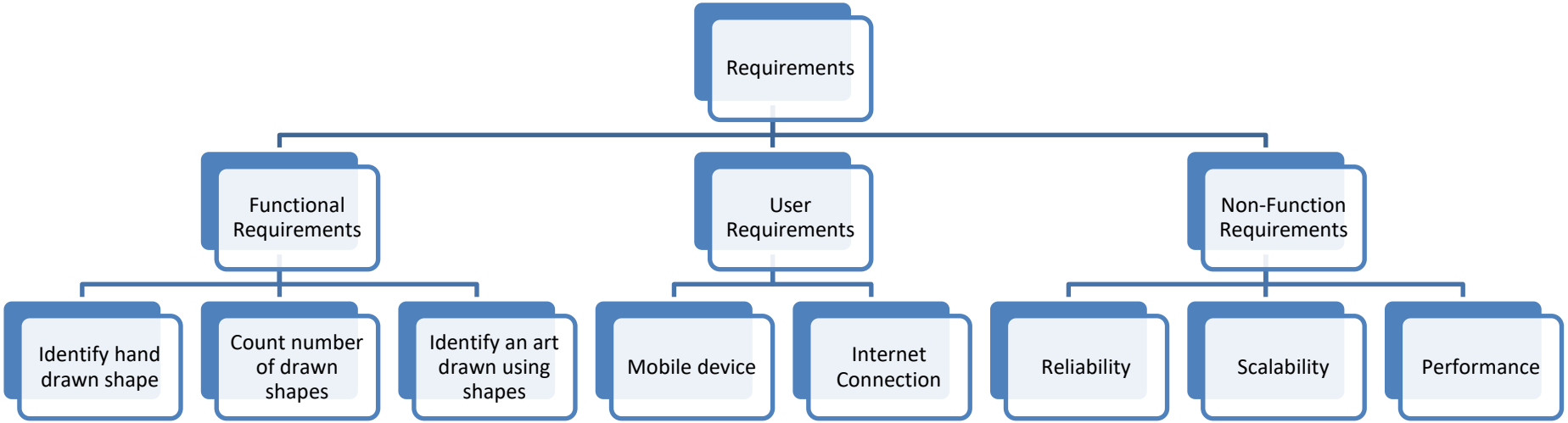
- Python
- JavaScript
- Kotlin
- Java
- AWS or Google Storage

Key Pillars

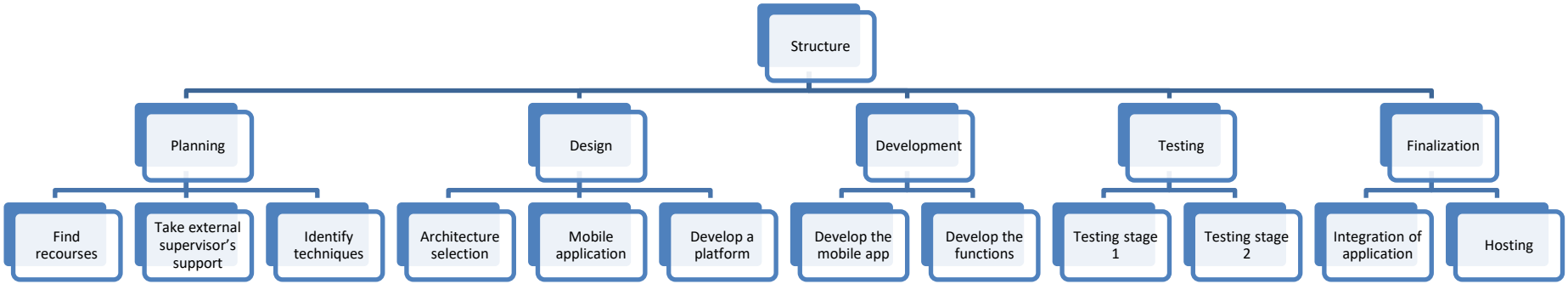
Techniques of Key Pillars

- Deep Learning
  - Neural Network
- Image Processing
  - Feature Extraction
  - Image segmentation

Requirements



Work Breakdown Structure



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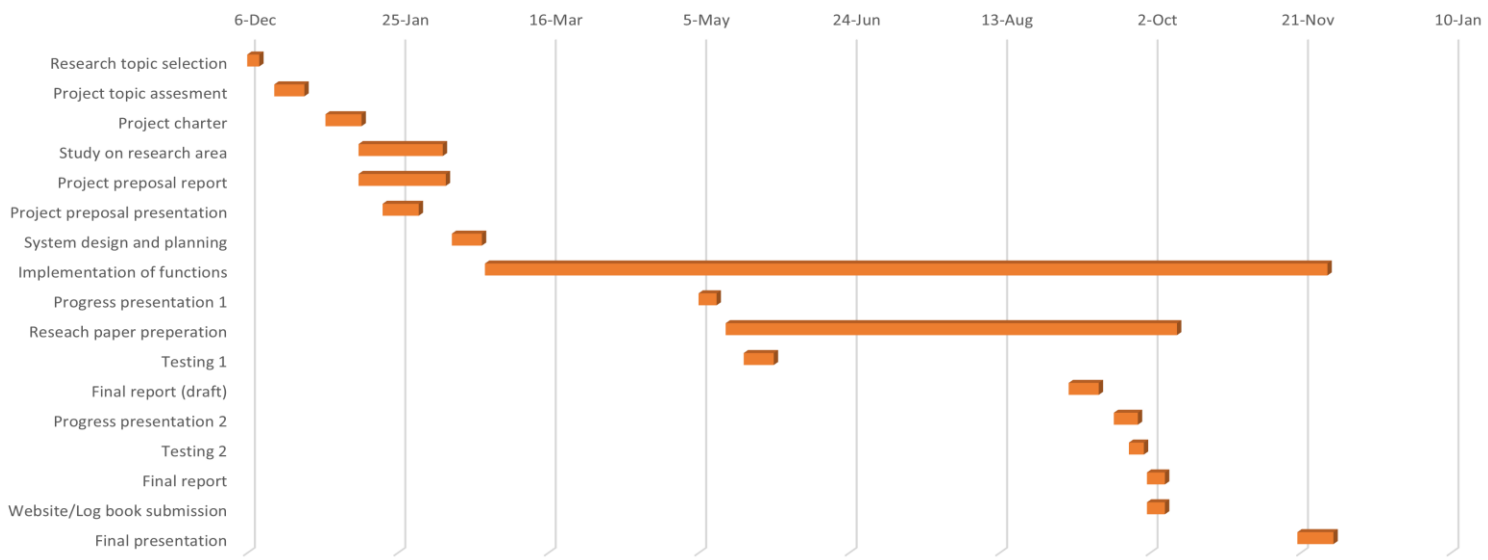
6-Dec
25-Jan
16-Mar
5-May
24-Jun
13-Aug
2-Oct
21-Nov
10-Jan
Research topic selection
Project topic assesment
Project charter
Study on research area
Project preposal report
Project preposal presentation
System design and planning
Implementation of functions
Progress presentation 1
Reseach paper preperation
Testing 1
Final report (draft)
Progress presentation 2
Testing 2
Final report
Website/Log book submission
Final presentation

IT19197838|L.H.G.N.Ravindu

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Introduction

- The preschool years are a critical period for children to receive high-quality personal care and learning experiences.
- Many primary schools still use the traditional learning process since it is very common.
- In a typical classroom, basic materials such as a blackboard, whiteboard, chalk, and marker are used.
- Our program allows students to recognize objects and colors.

BACKGROUND & RESEARCH GAP

platform	Identify object	Identify color	Track drawn line
abcmouse	Yes	No	No
Nursery	No	No	No
printkick	No	Yes	No
Our Application	Yes	Yes	Yes

Research Problem

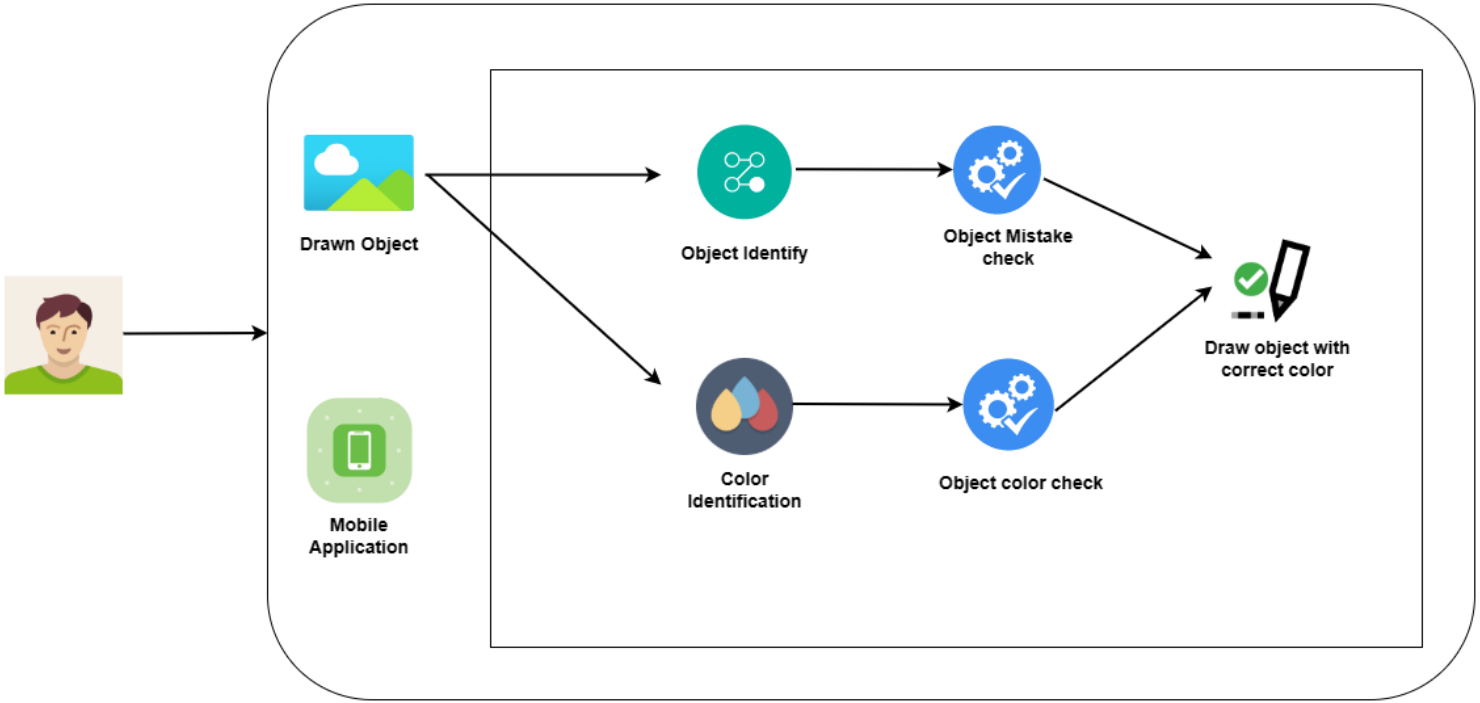
- Traditional education places a greater emphasis on teaching than on learning. There has been a lot of work put into developing a basic improvement that will ensure successful learning. Students used traditional methods such as color pencils, watercolors, papers, and other learning materials in this scenario. This is a massive waste. Also, most students are uninterested in this material, but they really interact with mobile phones, so we provide mobile solution for interactive learning for primary students.

Objectives

- Determine what pictures students drew on the surface.
- Pre-process the images that student's sketched picture.
- Track every line of the drawn image
- Identify mistakes done by student
- The algorithm will recognize the color of the student's sketched picture.
- Classify Using color classification method.
- Make a color suggestion that is appropriate.
- Testing and checking the accuracy.
- Finally, recommend a student creativity level.

Methodology

System Architecture



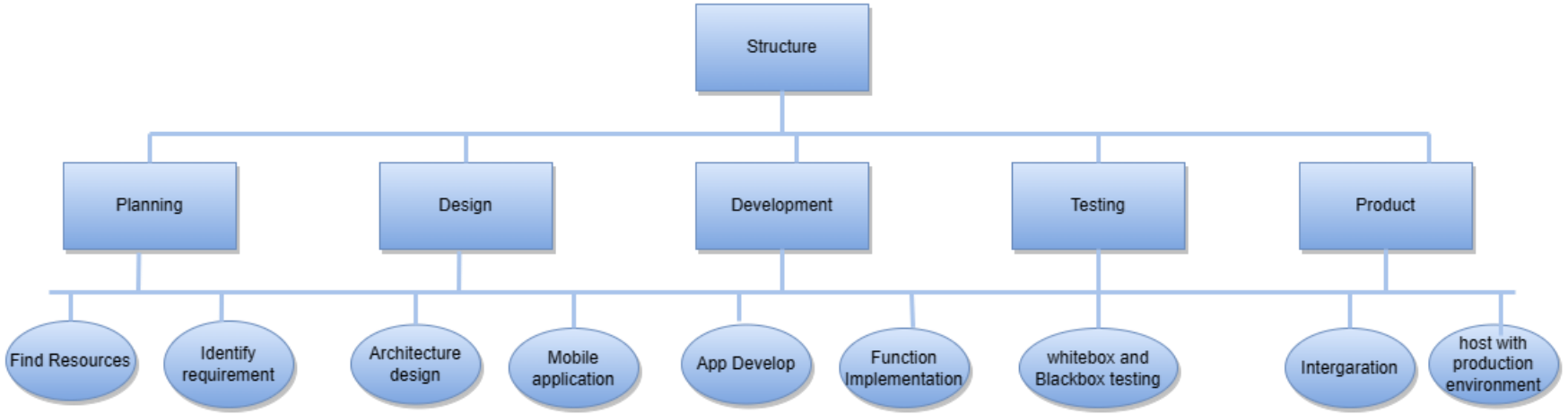
Technologies

- Python
- Node JS
- OpenCV
- AWS
- Flutter

Flutter

OpenCV

Work Breakdown Structure



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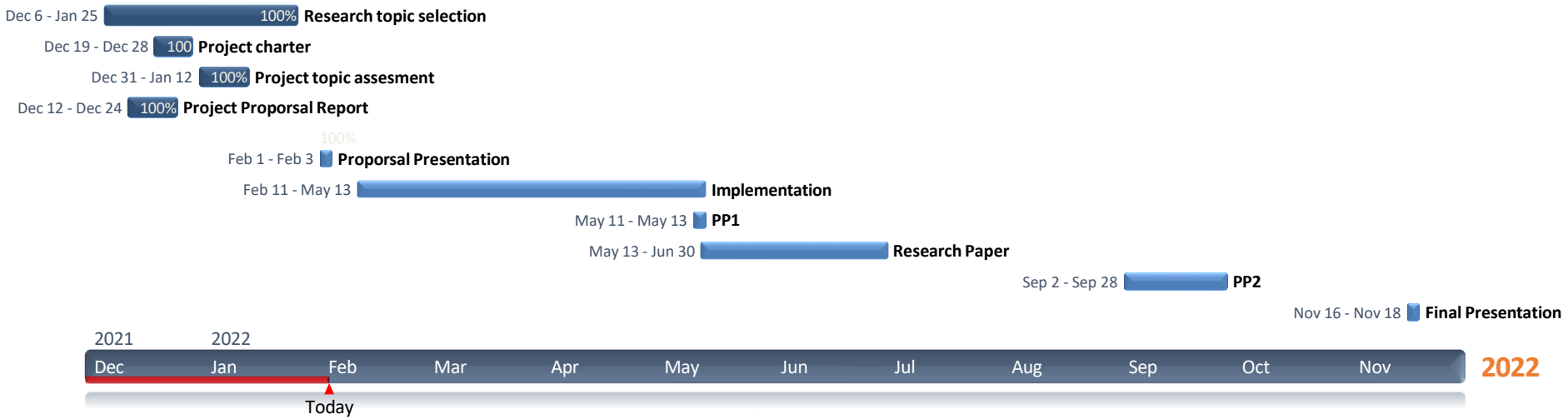
Dec 6 - Jan 25
100%
Research topic selection
Dec 19 - Dec 28
100
Project charter
Dec 31 - Jan 12
100%
Project topic assesment
Dec 12 - Dec 24
100%
Project Proporsal Report
100%
Feb 1 - Feb 3
Proporsal Presentation
Feb 11 - May 13
Implementation
May 11 - May 13
PP1
May 13 - Jun 30
Research Paper
Sep 2 - Sep 28
PP2
Nov 16 - Nov 18
Final Presentation
2021
2022
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
2022
Today

COMMERCIALIZATION

Our App

- **The First Computerized Commercialized & Automated Primary Education Application in Sri Lanka**
- **First App Introduce For Primary School Students Distance Learning**
- **75% Automated Flow For Teachers**

Main Features

- **Teach students letters efficiently.**
- **Improve the ability to draw images.**
- **Increasing Knowledge of shapes.**
- **Improve the ability to identify features in images.**

MARKET

How many children are in school in Sri Lanka?

According to the Ministry of Statistics, today there are approximately **10,012 public** schools serving close to 4,037,157 students, all around the island.

- Mean there will be around 1.5 Million primary students
- Approx. Customer Base 0.5 Million

How We Can Promote This App ?

- Facebook Advertisement
- Referral Program
- Notice
- TV Commercial

How Make Money This App ?

- User Subscriptions
- Partnerships

Free Plan

What You'll Get

- Unlimited Access
- Ads Free
- Notify the child errors
- Gold Member Card

Free

Try Premium For 1 Month Free

Selected

Premium Plan

What You'll Get

- Unlimited Access
- Ads Free
- Notify the child errors
- Gold Member Card

RS 299.00/month

Choose

Enterprise Plan

What You'll Get

- Unlimited Access
- Ads Free
- Notify the child errors
- Gold Member Card

Negotiable

Choose