2020_077

Sign Language to Text and Voice Translation and vice versa

Progress 01 Presentation

INTRODUCTION

- Problem Definition
  - No Proper Sign Language Interpreter for Sri Lankan Sign Language
- Research Solution
  - Text and Voice translator for Sri Lankan Sign Language (SSL)
- Risk Mitigation
  - COVID-19 and Dataset
- Requirements
  - Should be aware of the SSL Alphabet
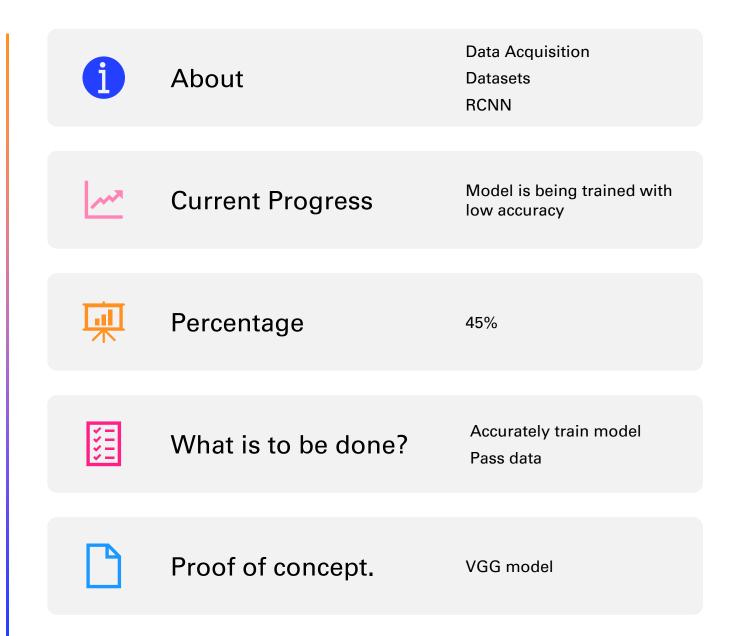- Overall Progress
  - 47%

Individual Progress – DATAQ

About

Current Progress

Percentage

What is to be done?

Proof of concept.

See notes section*

Individual Progress – DATAQ

See notes section*

ℹ️	**About**	Data Acquisition Datasets RCNN
📈	**Current Progress**	Model is being trained with low accuracy
📊	**Percentage**	45%
✅	**What is to be done?**	Accurately train model Pass data
📄	**Proof of concept.**	VGG model

ABOUT

- identify the hand gestures using R-CNN

- <u>Input</u>: Image of the user in real-time
- <u>Output</u>: the best model with high accuracy to detect hand gestures
- <u>Target Audience</u>: people with difficulties in communication & ordinary people

- Functional Requirements:
    - Identify hand gestures in real time through low resolution camera

CURRENT PROGRESS

- 46% covered from overall component
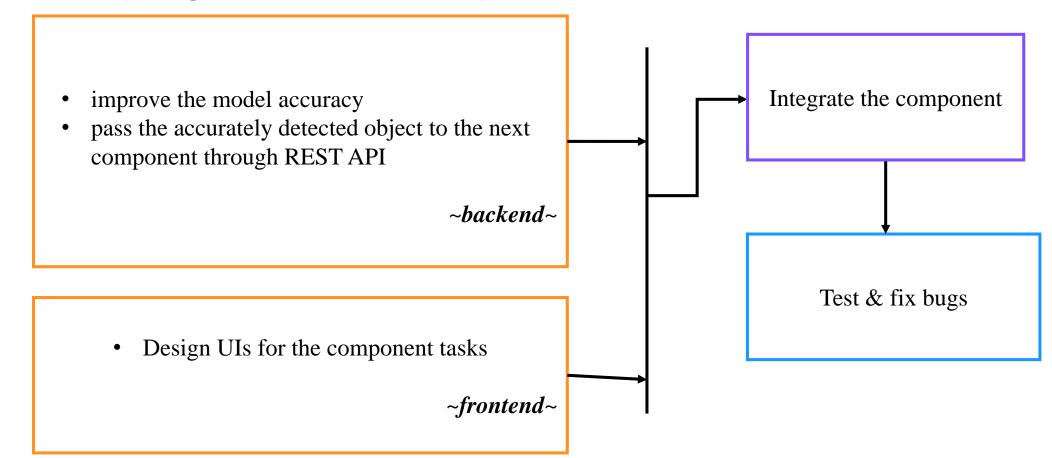- Covered Tasks:

Create Dataset

- Train different models in order to choose the best
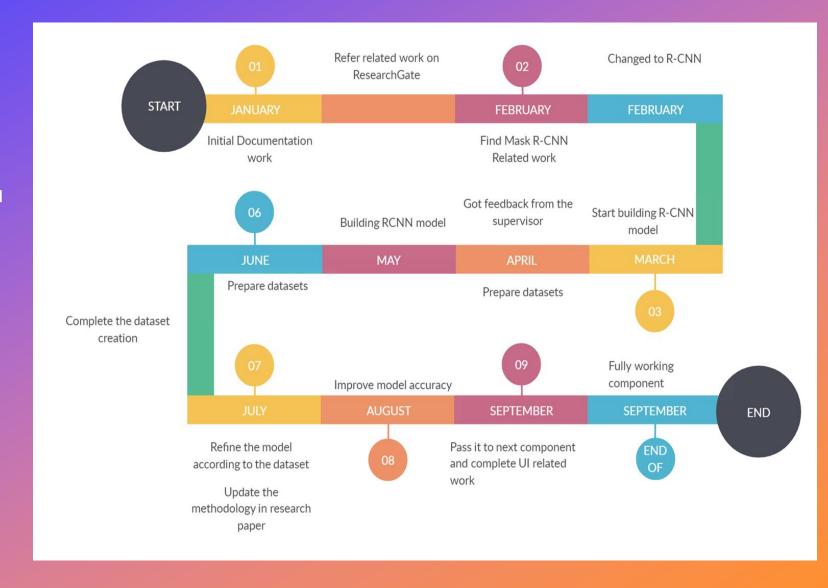
  ML Algorithms used: RCNN

View created dataset

WHAT IS TO BE DONE?

- Future progress of the component:

- improve the model accuracy
- pass the accurately detected object to the next component through REST API

~backend~

- Design UIs for the component tasks

~frontend~

Integrate the component

Test & fix bugs

PROOF OF CONCEPT

Demo!!

Sign Recognition & Translation

About

Current Progress

Percentage

What is to be done?

Proof of concept.

ABOUT

Developing an API.

Gets the dataset and a sign image as input.

Identified letters will be output.

Can be used in future for similar developments.

CURRENT PROGRESS

- Using ASL dataset as dummy dataset.
- Dataset can be visualized.
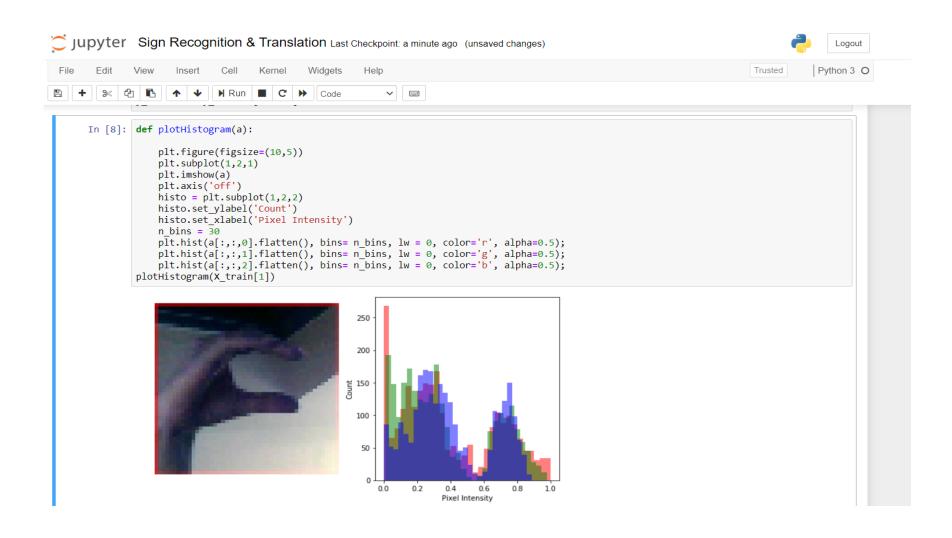- Training and testing in progress.
- 45% completed.

WHAT IS TO BE DONE?

- Error fixing in training and testing part.
- Turning ML model into an API.
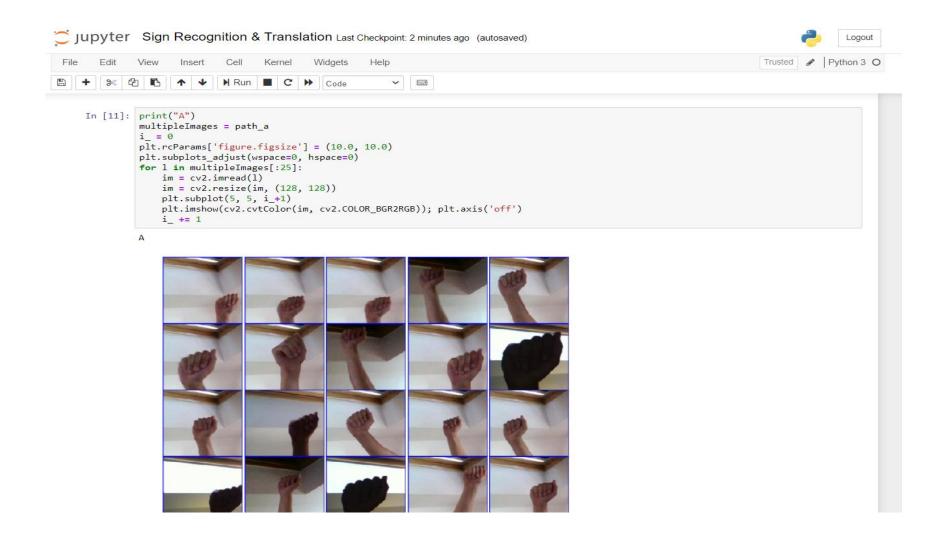
COMPONENT MILESTONE

PROOF OF CONCEPT

Sample Images

Text & Voice Assistance

About

Current Progress

Percentage

What is to be done?

Proof of concept.

About
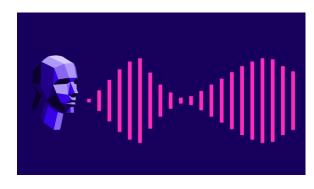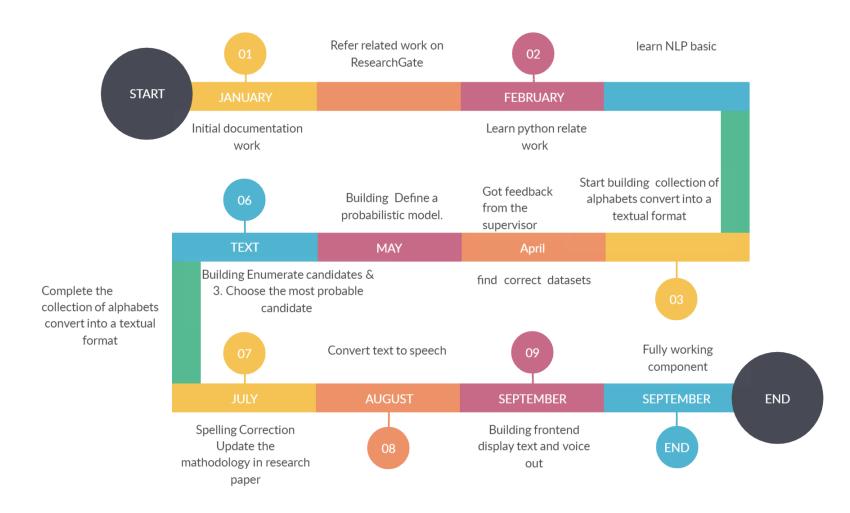
❖ Text and voice assistants for Sri Lanka Local sign language is a kind of synthesis of speech which in turn is accountable for converting sign language into an output of spoken voice and text.

❖ NLP

COMPONENT MILESTONE

Individual Progress – Text & Voice Assistance

Current Progress

❖ Spelling Correction

Percentage

48%

Individual Progress – Text & Voice Assistance
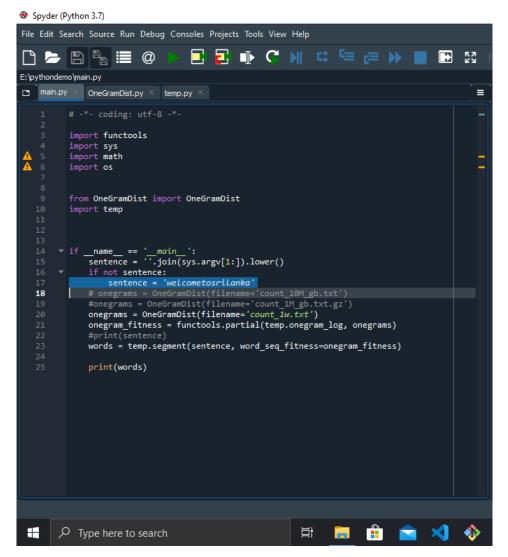
What is to be done?

❖ Convert text to speech

❖ Covert component to real-time

❖ frontend development
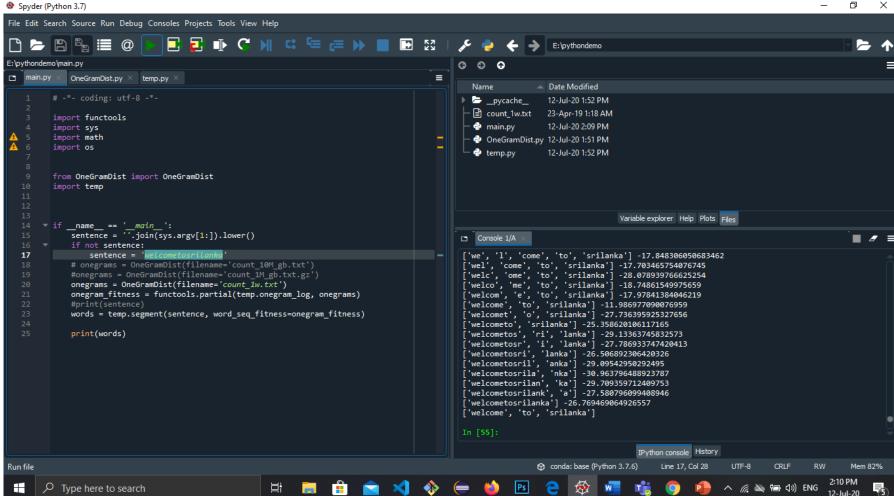
Individual Progress – Text & Voice Assistance

> Proof of concept.

collection of alphabets convert into a textual format

PC:1

there are no spaces between them

Individual Progress – Text & Voice Assistance

" Proof of concept.

collection of alphabets convert into a textual format

PC:2 final out

Individual Progress – REVENG

About

Current Progress

Percentage

What is to be done?

Proof of concept.
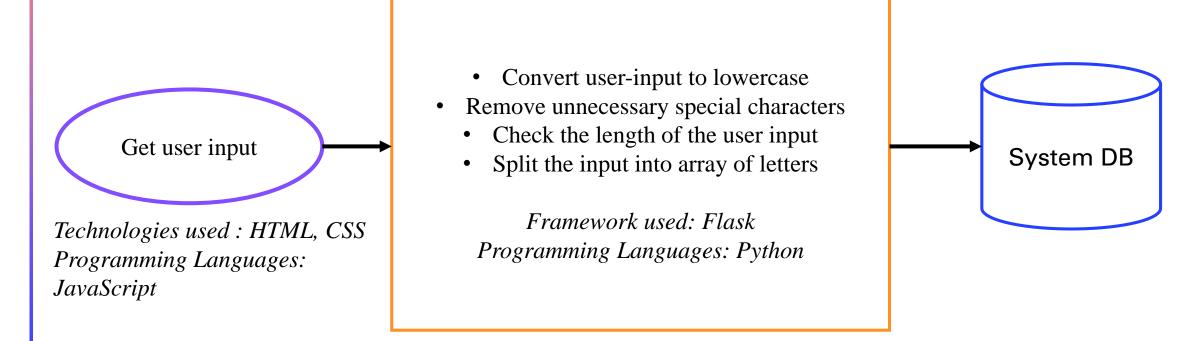
ABOUT

- Converting user inserted text/sentence into SSL

- Input: any user input in English language
- Output: identified sign as a GIF
- Target Audience: ordinary people who can communicate verbally

- Functional Requirements:
  - able to translate given English text format into SSL

  - display the output in real-time

  - should be accessible to both ordinary people & professionals
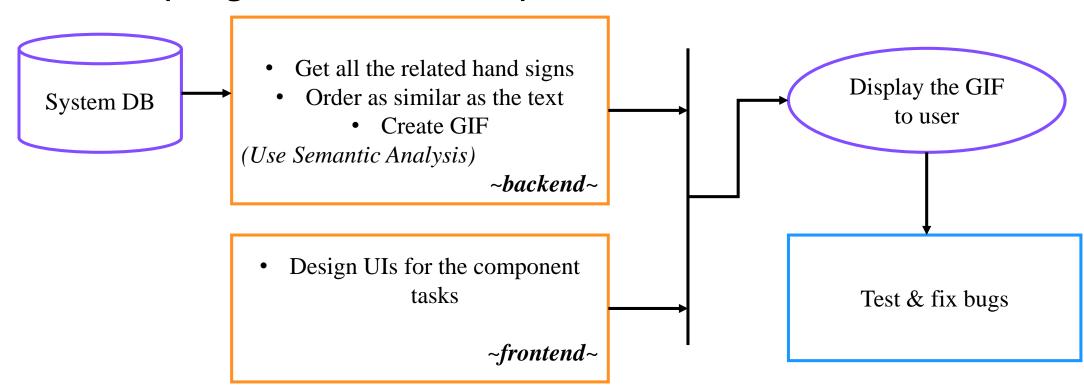
CURRENT PROGRESS

- Nearly 50% covered from overall component
- Covered Tasks:

Get user input

- Convert user-input to lowercase
- Remove unnecessary special characters
- Check the length of the user input
- Split the input into array of letters

Technologies used : HTML, CSS Programming Languages: JavaScript

Framework used: Flask Programming Languages: Python

System DB

WHAT IS TO BE DONE?

• Future progress of the component:

System DB

• Get all the related hand signs
• Order as similar as the text
• Create GIF
(Use Semantic Analysis)

~backend~

• Design UIs for the component tasks

~frontend~

Display the GIF to user

Test & fix bugs

PROOF OF CONCEPT

Demo!!

COMPONENT MILESTONE

START

01 — January

Refer relavant research papers based converting text into sign language

Refer relavant research papers based converting text into sign language — February — **02**

03 — March

Refer relavant research papers based converting text into sign language

Refer relavant research papers based converting text into sign language — April — **04**

Create an HTML form to user input & pass the input to backend for next task — May — **05**

Develop UIs for the tasks of the component & integrate the fontend with completed backend

07 — July

Split text/sentence into letters applying identified different conditions — June — **06**

Search various methods to split text/sentence into letters while accepting different conditions — June — **06**

08 — August

Pass splitted letters to the system DB

Pass all the selected hand signs to system backend for further implementations — July — **07**

Search for the hand signs for passed letters in system DB & fetch all the hand signs which are chosen — July — **07**

Study about Semantic Analysis & create GIFs with selected hand signs applying Semantic Analysis — August — **08**

Test the integrated component & fix the bugs — August — **08**

Test & fix the bugs in the product. Commercialize the completed product

STOP — September — **09**

Integrate all the components together & develop the product — Sempember — **09**

QUESTIONS?