Speech Training App For Stroke Patients

Under the Supervision of

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INTRODUCTION 01

Brief Definition of Stuttering and Project Idea

Stuttering

A speech disorder that involves frequent and significant problems with normal fluency and flow of speech.

Avoid Stuttering

We at Fluencia, aiming to help people to avoid stuttering since stuttering cannot be cured.

HOW?

Patient Record his/her Voice — 01

02 — Analyze Patient's Voice and Show Report

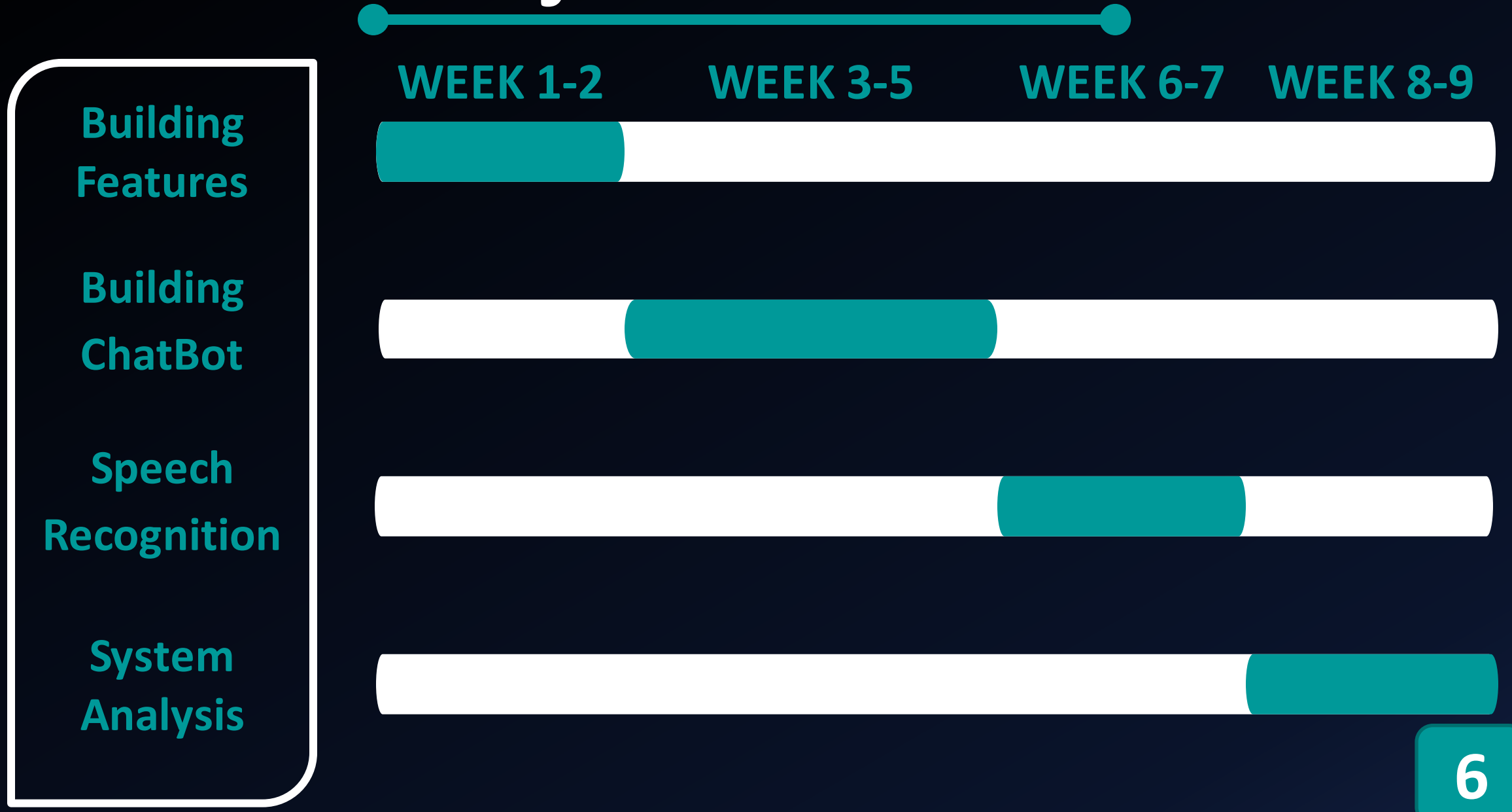
Suggest Exercises to Patient — 03

04 — Patient Practice Exercises

Patient Record his/her Voice Again to See Improvement — 05

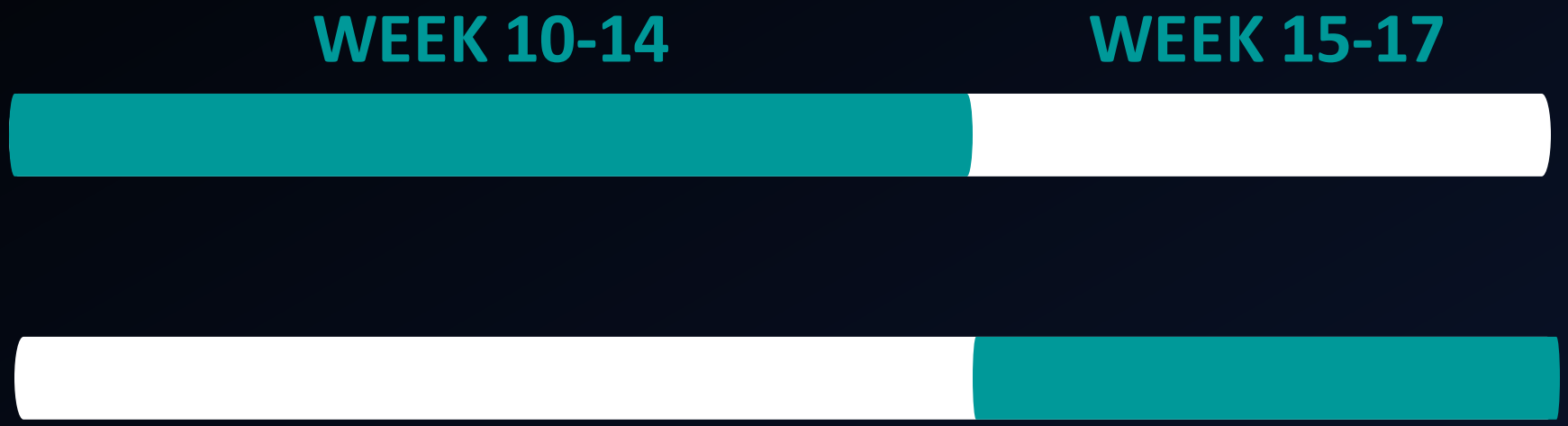
06 — Analyze and Show Report Again

Project Timeline



Implementation

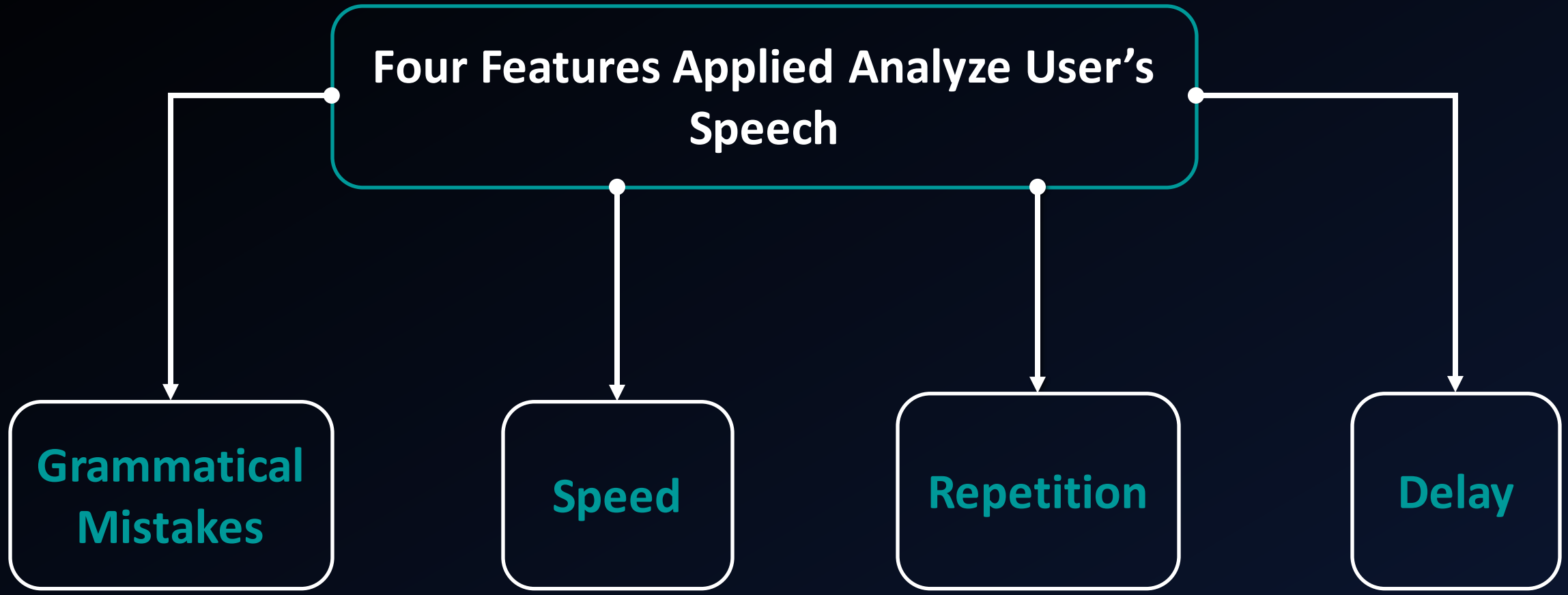
Testing and Report



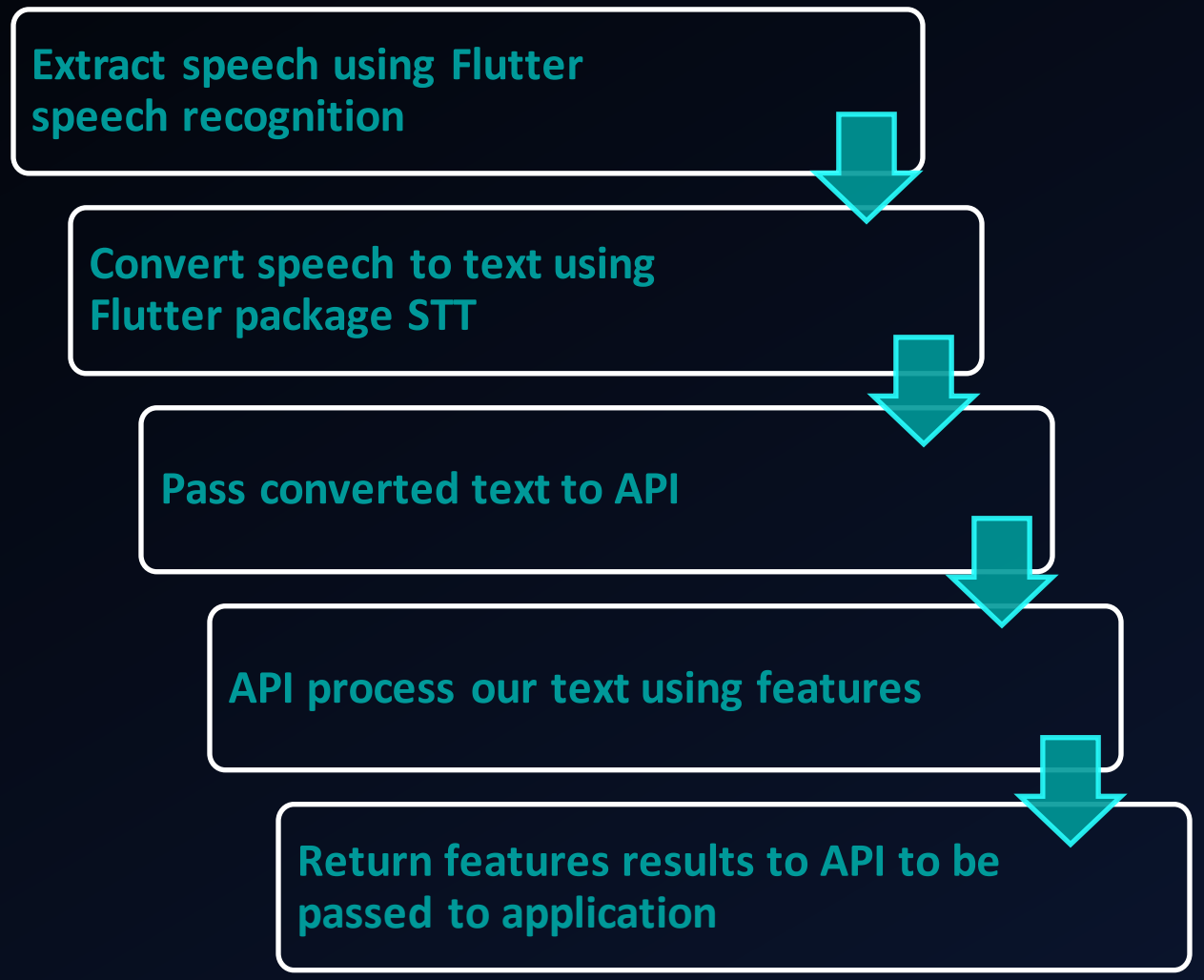
Speech Recognition and Analyzing

02

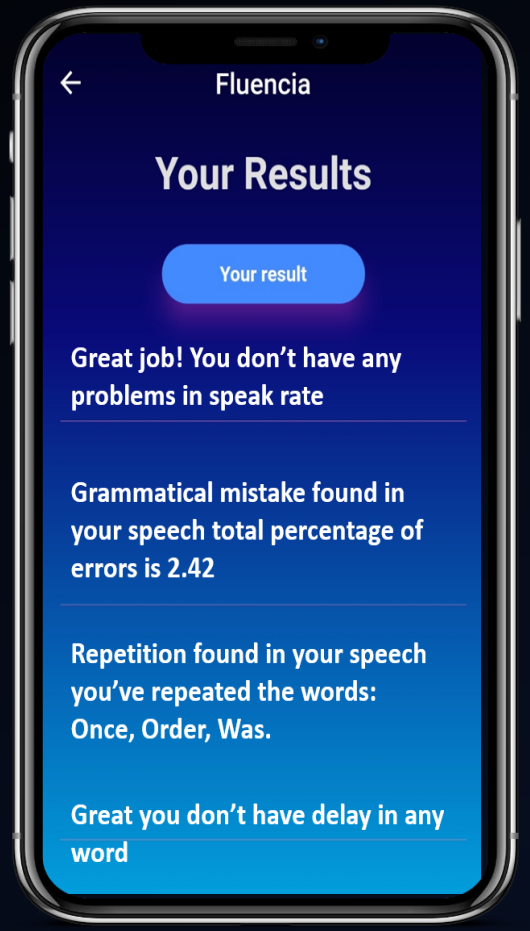
Details About Applied Techniques and Algorithms


Four Features Applied Analyze User's Speech
Grammatical Mistakes
Speed
Repetition
Delay

Speech Analysis Pipeline



Purpose Behind Features



Generate a report to show the user what kind of problems he/she has

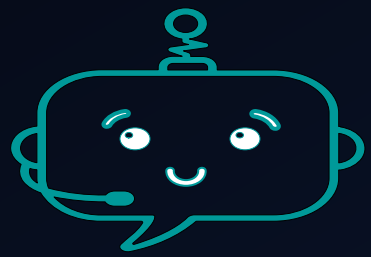
ChatBot Structure

03

Preprocessing, Modelling, and Dividing Data

ChatBot

Virtual Friend



Vocal ChatBot

Structure

DataSet

Tag

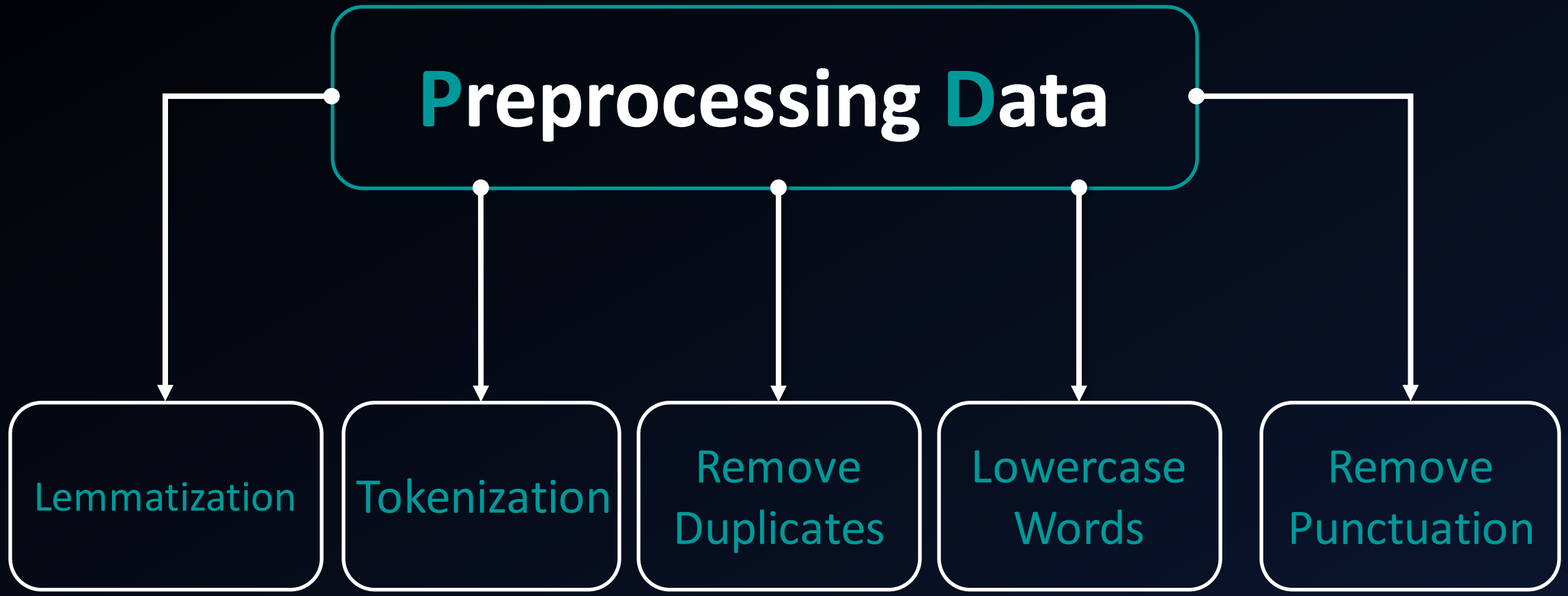
Good Bye

Patterns

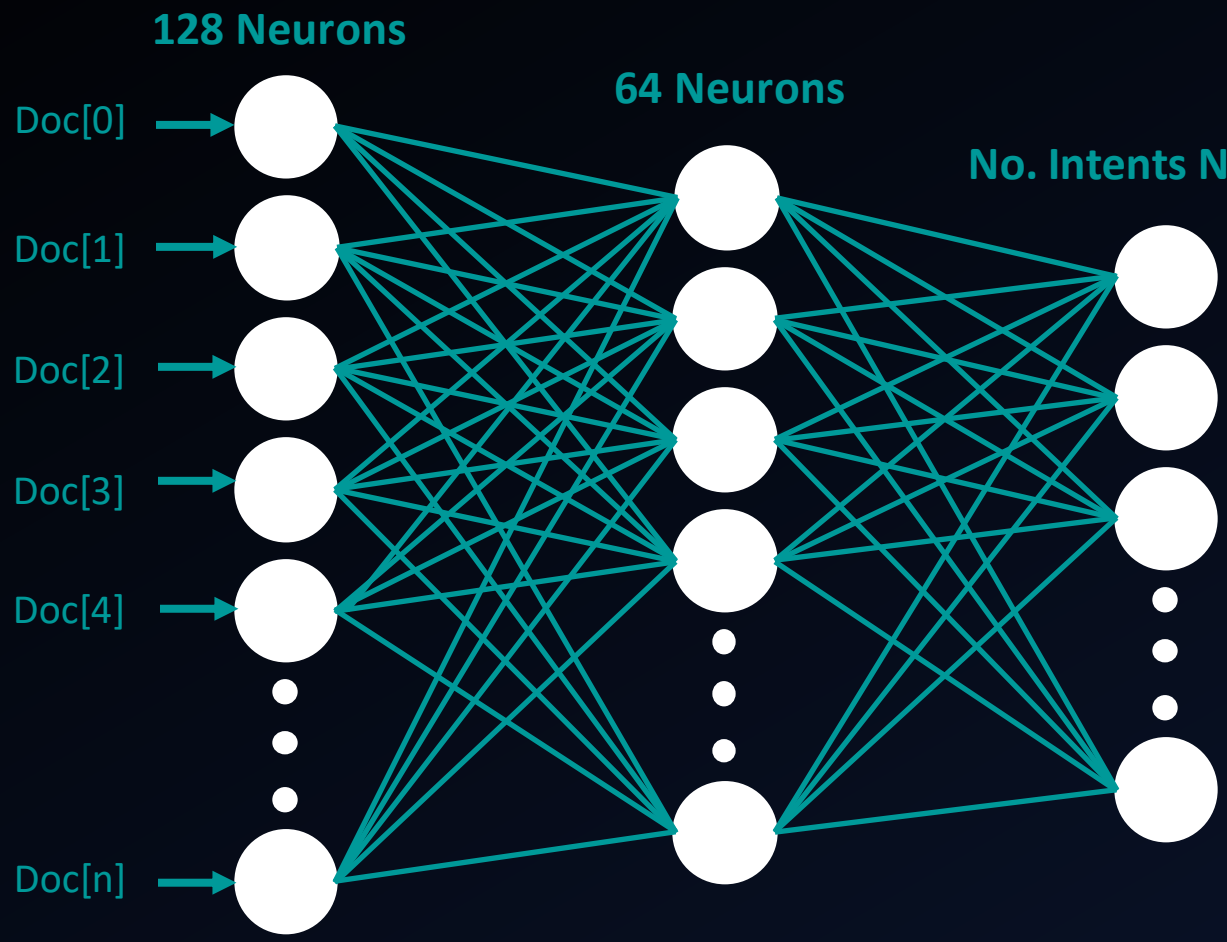
- Bye
- Goodbye
- Bye Bye

Responses

- See you later
- Have a nice day
- Bye! Come back again


Preprocessing Data
Lemmatization
Tokenization
Remove Duplicates
Lowercase Words
Remove Punctuation

Architecture

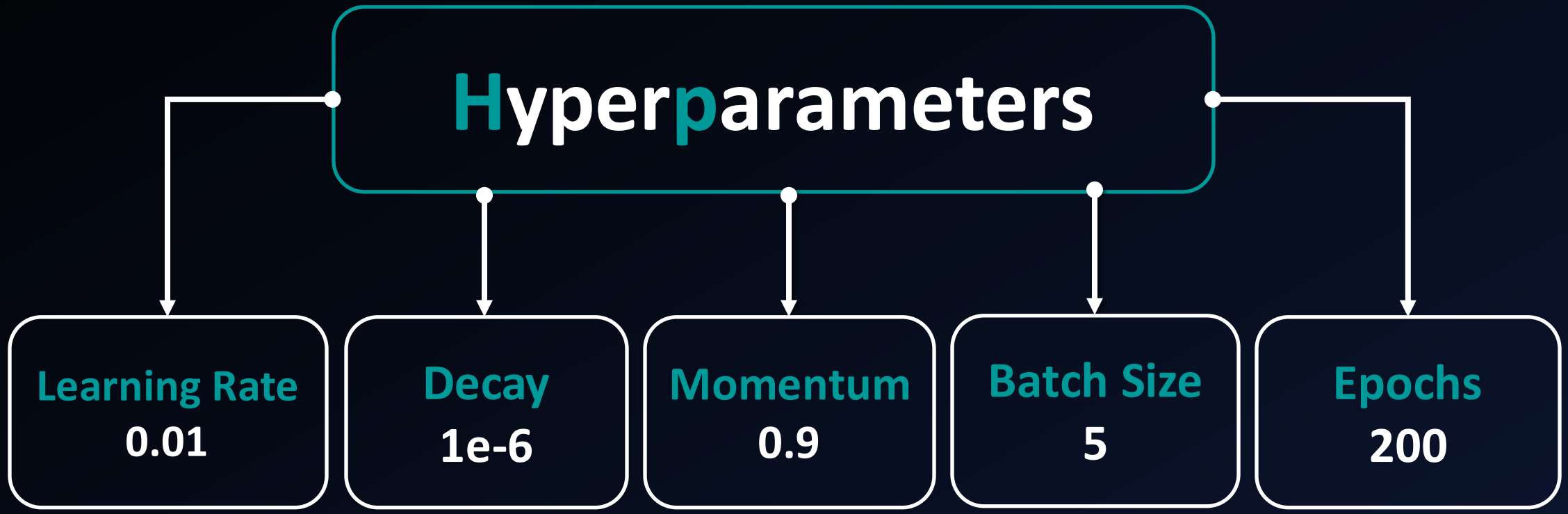


Fully connected sequential **dense layers + Dropout**

SoftMax Classification

We used an Artificial Neural Network (ANN) with Stochastic Gradient Decent (SGD) to train our model. Where the activation function used were **ReLU** and **SoftMax.**

Results



After applying the above Hyperparameters

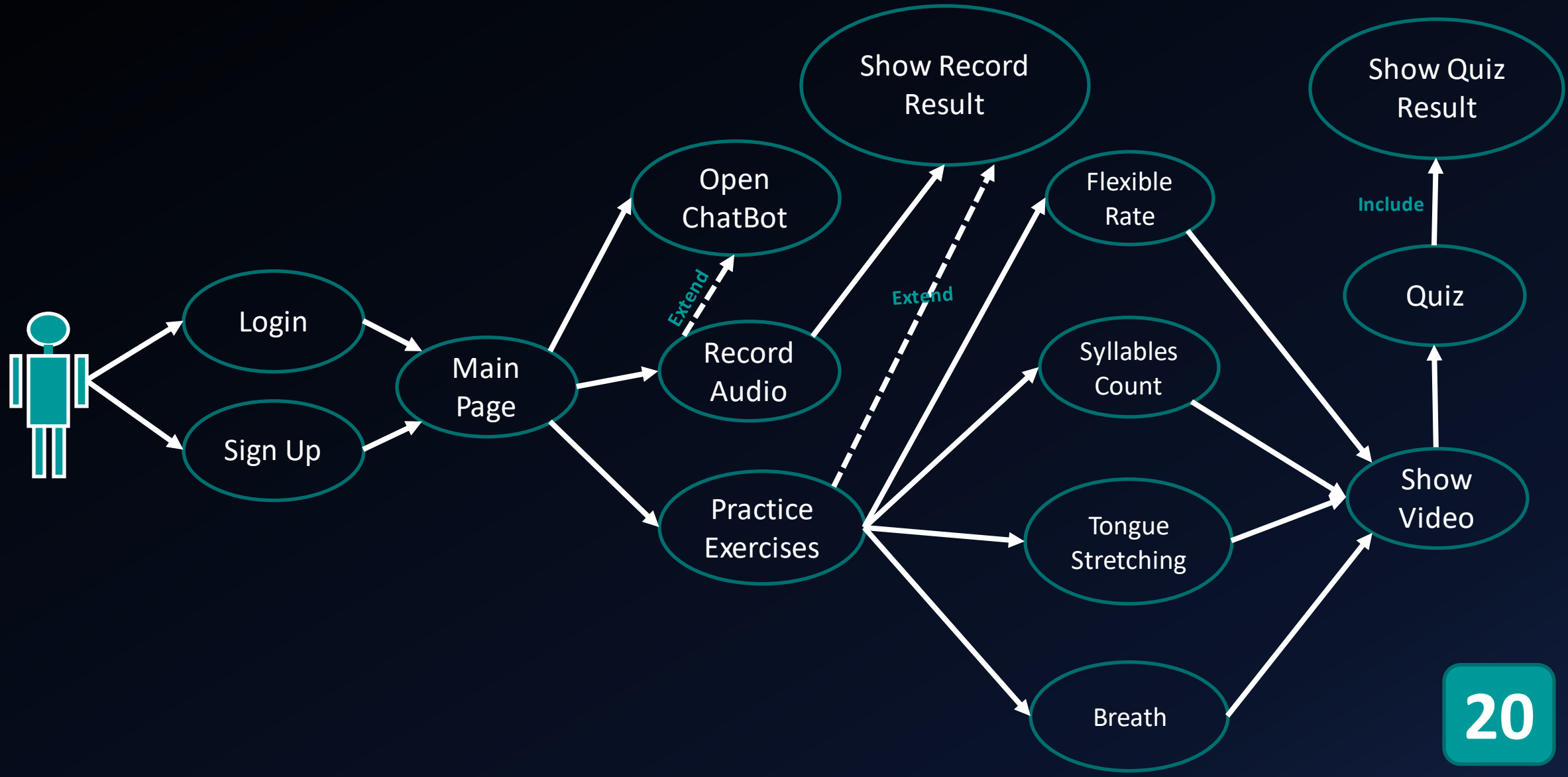
We achieved accuracy of **96%**

Application Structure and Exercises

04

Show Exercises and How the Application Built

Use Case Diagram



Type of Exercises

01 Tongue Exercise

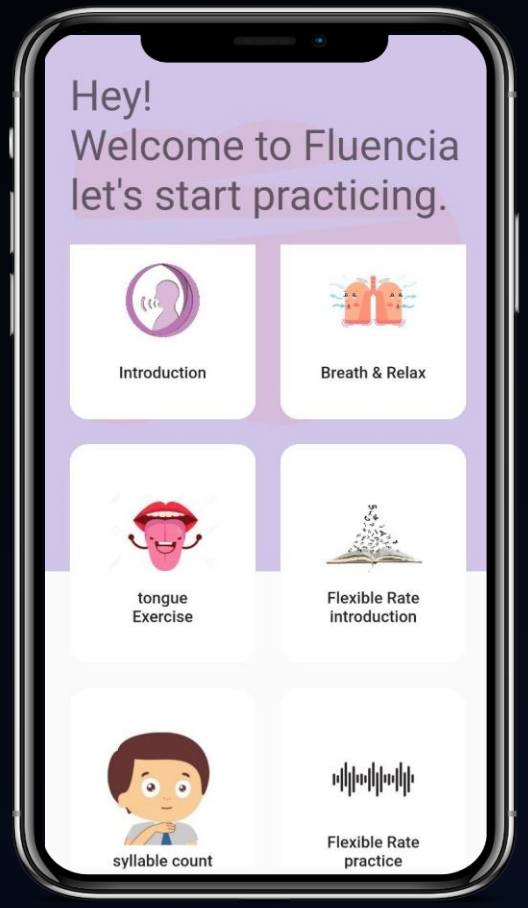
02 Breath Exercise

03 Flexible Rate

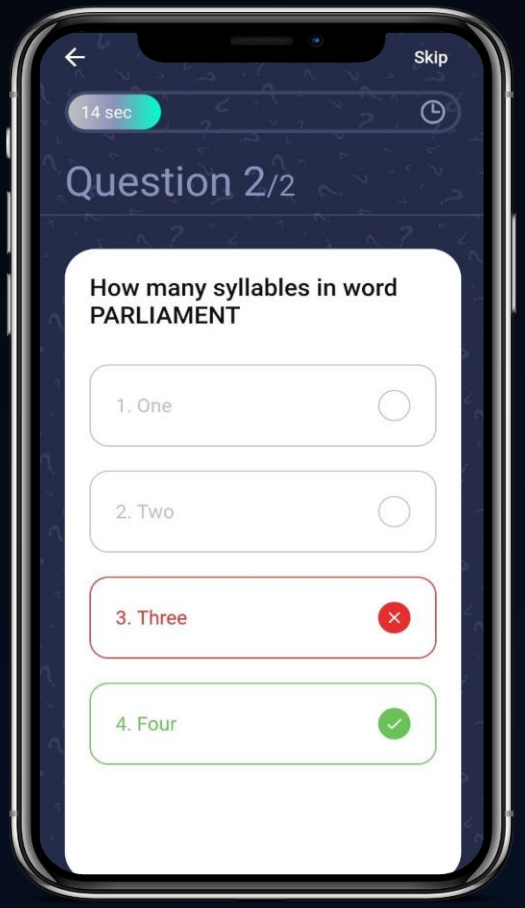
04 Syllable Count

05 Stretching Vowels

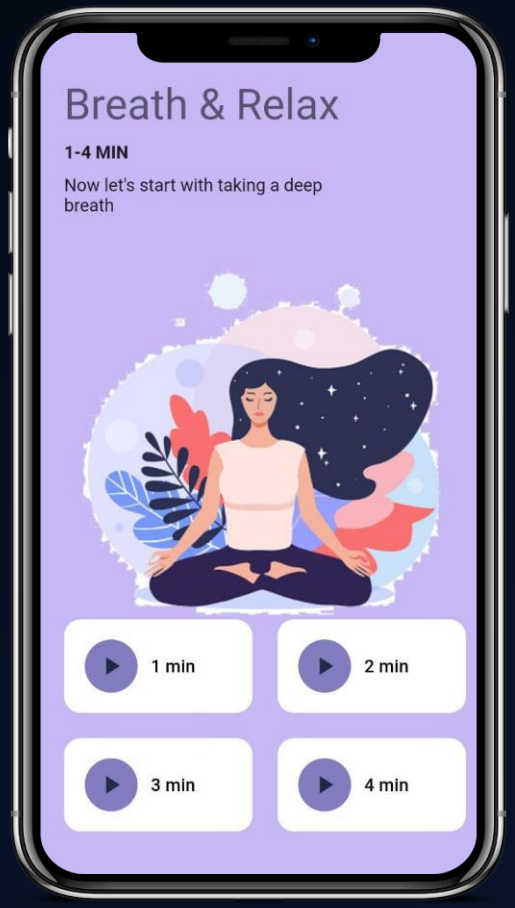
Exercises



Main Exercises Interface



Syllables Quiz



Breath Control Exercise Interface

Work Details and Used Technologies

05

Work Sequence, Difficulties, Future Vision, and Technologies

Difficulties

Training

Speech

Linking

Dataset

Research

Future Work

Add More Exercises

Support More Languages

Premium Features That Can Be Unlocked By Committing To Exercise Daily.

Improve Speech Analysis And Give A Better-detailed Report.

System and Design


Flutter

Application Building

Model Developing