ANNA UNIVERSITY: CHENNAI-600 025

BONAFIDE CERTIFICATE

Certified that this project report "**DEVELOPMENT OF AN AUTOMATED TEXT TO SPEECH DEVICE FOR VISUALLY IMPAIRED**" is the bonafide work of,

L. KINGSLY KIRUBAKARAN	**-**	**953219106014**
M. KISHORE ANTON	**-**	**953219106015**
T. SIVA KUMAR	**-**	**953219106035**
M. SIVANRAJ	**-**	**953219106036**

who carried out this project under my supervision.

SIGNATURE

Dr. K. ESAKKI MUTHU M.E., Ph.D.,

HEAD OF THE DEPARTMENT

Department of Electronics and Communication Engineering,
University VOC College of Engineering.
Thoothukudi-628 008

SIGNATURE

Dr. A. MOOKAMBIGA M.TECH., Ph.D.,

SUPERVISOR

Department of Electronics and Communication Engineering,
University VOC College of Engineering,
Thoothukudi-628 008

Submitted for the project viva-voce examination held on _____

INTERNAL EXAMINER EXTERNAL EXAMINER

ACKNOWLEDGEMENT

It is the difficult task in life to choose words to express words to express one's gratitude towards in the beneficiaries. We are very much grateful to the **ALMIGHTY GOD** who helped us the way throughout the project and who has molded us into what we are today.

We wish to express our heartfelt regards and sincere thanks to our beloved Dean **Dr. C. PETER DEVADOSS M.E., Ph.D.,** University VOC College of Engineering for his generous guidance, help and constant encouragement during the course of this project work.

We wish to express our sincere thanks to our Head of the Department **Dr. K. ESAKKI MUTHU M.E., Ph.D.,** Department of Electronics and Communication Engineering, for his insightful comments and constructive suggestions to improve the quality of this project.

We have immense pleasure on expressing our sincere thanks to our Project Coordinator and our respected guide **Dr. A. MOOKAMBIGA M.TECH., Ph.D.,** Assistant Professor, Department of Electronics and Communication Engineering, for her stimulating guidance, continuous encouragement and supervision throughout the course of this work.

We wish to express our deep sense of gratitude to our parents, friends and all teaching and non-teaching staff members and all who participated enthusiastically with their constructive criticism either directly or indirectly in making this project a grand success.

ABSTRACT

This project involves the development of a text-to-speech system using a Raspberry Pi 4, a Pi Camera module 3, and Google Cloud services. The system is designed to capture an image containing text, extract the text using OCR technology, translate the text to a desired language using the Google Translate, and generate speech from the translated text using the Google Cloud Text-to-Speech API. The project aims to address the issue of language barriers, allowing users to capture images containing text in any language and receive spoken translations in their desired language. The project's use of OCR technology and cloud-based translation services ensures high accuracy and quality in the translation process. The Google Cloud Text-to-Speech API's lifelike intonation, rhythm, and pacing create natural-sounding speech, making the system highly effective in facilitating communication. The project's efficient and user-friendly design makes it an ideal tool for various applications, including education, language learning, and accessibility for individuals with visual impairments. The project's use of a Raspberry Pi 4 and Pi Camera module 3 makes it portable and accessible for users in various settings. Overall, this project demonstrates the significant impact that technology can have on breaking down language barriers and facilitating communication and access to information for individuals worldwide.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

API – Application Programming Interface

ASCII – American Standard Code for Information Interchange

BMP – Bitmap Image file

CNN – Convolutional Neural Network

ConvNet – Convolutional Network

JPEG – Joint Photographic Experts Group

ML – Machine Learning

NMT – Neural Machine Translation

OCR – Optical Character Recognition

OpenCV – Open Source Computer Vision Library

PNG – Portable Network Graphics

RNN – Recurrent Neural Network

RGB – Red Green Blue

SSML – Speech Synthesis Markup Language

TTS – Text to Speech

VS Code – Visual Studio Code

YOLO – You Only Look Once