SIGN LANGUAGE TRANSLATOR

A PROJECT REPORT

submitted by

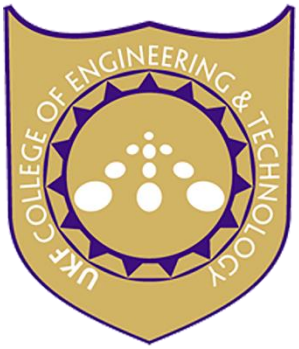
AKHIL A
(UKP16CS006)

to

the APJ Abdul Kalam Technological University
in partial fulfilment of the requirements for the award of the Degree

of

Bachelor of Technology
In
Computer Science and Engineering



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MAY 2020

DECLARATION

I undersigned hereby declare that the project report “Sign Language Translator”, submitted for partial fulfilment of the requirements for the award of degree of Bachelor of Technology of the APJ Abdul Kalam Technological University, Kerala is a bonafide work done by me under supervision of Asst. prof. Ms. Remya Shaji. This submission represents my ideas in my own words and where ideas or words of others have been included, I have adequately and accurately cited and referenced the original sources. I also declare that I have adhered to ethics of academic honesty and integrity and have not misrepresented or fabricated any data or idea or fact or source in my submission. I understand that any violation of the above will be a cause for disciplinary action by the institute and/or the University and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been obtained. This report has not been previously formed the basis for the award of any degree, diploma or similar title of any other University.

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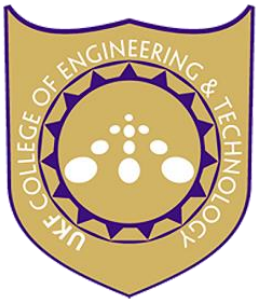

CERTIFICATE

This is to certify that the project report entitled "**SIGN LANGUAGE TRANSLATOR**" submitted by **Akhil A (UKP16CS006)** to the APJ Abdul Kalam Technological University in partial fulfilment of the requirements for the award of the Degree of Bachelor of Technology in Computer Science And Engineering is a bonafide record of the project work carried out by him under my guidance and supervision. This report in any form has not been submitted to any other University or Institute for any purpose.

Ms. Remya Shaji
Internal Supervisor

Dr. Ramani K
HEAD OF THE DEPARTMENT

CONTENTS

Contents	Page No.
ACKNOWLEDGEMENT	i
ABSTRACT	ii
LIST OF FIGURES	iii
ABBREVIATIONS	iv
CHAPTER 1 INTRODUCTION	1
1.1 GENERAL BACKGROUND	1
CHAPTER 2 LITERATURE SURVEY	3
2.1 THEORETICAL INVESTIGATIONS	3
2.1.1 SENSOR BASED APPROACH	3
2.1.2 VISION BASED APPROACH	4
CHAPTER 3 PROBLEM DEFINITION	6
CHAPTER 4 EXISTING SYSTEM	7
4.1 DATA-GLOVE APPROACH	8
4.2 VISUAL-BASED APPROACH	9
CHAPTER 5 PROPOSED SYSTEM	11
5.1 PRE-PROCESSING	12
5.2 IMAGE PREPARATION	12
5.3 SHAPE DETECTION	13
5.4 SHAPE SIGNATURE	13
5.5 SIGN RECOGNITION	13
5.6 RESULTS COMBINATION	13
CHAPTER 6 SYSTEM REQUIREMENTS	17
6.1 SOFTWARE REQUIREMENTS	17
6.1.1 PYTHON 3.6	17
6.1.2 TENSORFLOW FRAMEWORK	18
6.1.2.1 TENSORFLOW EXECUTION	19

6.1.3 KERAS API 20
6.1.4 OPENCV 21
6.1.5 PYQT 22
6.1.6 TKINTER 24
6.1.7 OFFLINE TTS ASSISTANCE FOR PYTHON 26
6.2 HARDWARE REQUIREMENTS 26
6.2.1 INTEL PENTIUM DUAL CORE E6600 3.06GHZ 27
6.2.2 HARD DISK 27
6.2.3 RAM 27
6.2.4 GRAPHICS CARD 28
CHAPTER 7 IMPLEMENTATION 29
7.1 CONVOLUTIONAL NEURAL NETWORK 29
7.1.1 DESIGN 30
7.1.1.1 CONVOLUTIONAL 30
7.1.1.2 POOLING 31
7.1.1.3 FULLY CONNECTED 31
7.1.1.4 RECEPTIVE FIELD 31
7.1.1.5 WEIGHTS 31
7.1.2 BUILDING BLOCKS 32
7.1.2.1 CONVOLUTIONAL LAYER 32
7.1.2.2 LOCAL CONNECTIVITY 33
7.1.2.3 SPATIAL ARRANGEMENT 33
7.1.2.4 PARAMETER SHARING 34
7.1.2.5 POOLING LAYER 34
7.1.2.6 ReLU LAYER 35
7.1.2.7 FULLY CONNECTED LAYER 36
7.1.2.8 LOSS LAYER 36
7.2 IMPLEMENTED MODULES 37
7.2.1 PREDICTOR MODULE CODE 39
7.2.2 SINGLE SCAN MODULE CODE 40

7.2.3 SENTENCE SCAN MODULE CODE 41
7.2.4 EXPORT FILE MODULE CODE 43
7.2.5 CREATE GESTURE MODULE CODE 43
CHAPTER 8 ADVANTAGES 45
CHAPTER 9 FUTURE SCOPE 46
CHAPTER 10 RESULT 47
CHAPTER 11 CONCLUSION 52
REFERENCES 53

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ABSTRACT

In recent years, human–computer interaction behaviour has appeared more and more in daily life. Especially with the rapid development of computer vision technology, the human centred human–computer interaction technology is bound to replace modern day computer-centred interaction technology. The study of gesture recognition is in line with this trend, and gesture recognition provides a way for many devices to interact with humans. The traditional gesture recognition method requires manual extraction of feature values, which is a time-consuming and laborious method. In order to break through the bottleneck, the implementation of a gesture recognition algorithm based on the convolutional neural network is applied. I apply this method to expression recognition, calculation, and text output, and achieve good results. Through this experiment, my aim to show that the proposed method can train the model to identify gestures with fewer samples and achieve better gesture classification and detection effects. Moreover, this gesture recognition method is less susceptible to illumination and background interference. It also can achieve an efficient real-time recognition effect through which gesture translation for the intended mute populace aid without third party intervention for their ease of living.

LIST OF FIGURES

No.	Title	Page No.
4.1	American Sign Language	7
4.2	Data Glove with Flex Sensors	9
4.3	Colour-coded Gloves	10
5.1	Proposed Model	11
5.2	Pre-processing stage	12
5.3	Modules in proposed system	14
5.4	Convolutional Neural Network Model	15
5.5	GUI Prototype Design	16
6.1	Python logo	17
6.2	Tensorflow logo	18
6.3	Keras logo	20
6.4	OpenCV logo	21
7.1	Neurons of a convolutional layer	32
7.2	Typical CNN architecture	33
7.3	Max pooling with a 2x2 filter and stride = 2	35
7.4	RoI pooling to size 2x2, above region proposal has size 7x5.	36
10.1	Accuracy and loss rates of trained model	47
10.2	Accuracy and loss rate graphs	47
10.3	GUI Main Screen	48
10.4	Scan Single Gesture Screen	49
10.5	Stream of Character Formation Screen	49
10.6	Conversion Screen	50
10.7	Exported file after conversion	50
10.8	Custom Gesture Screen	51

ABBREVIATIONS

2D	Two-Dimensional
ASL	American Sign Language
ASLR	American Sign Language Recogniser
CNN	Convolutional Neural Network
HSV	Hue, Saturation, Value
MLP	Multi-Layer Perceptron Neural Network
NN	Neural Network
OpenCV	Open Source Computer Vision Library
ReLU	Rectified Linear Unit
RGB	Red-Green-Blue
SIFT	Scale-Invariant Feature Transform
TTS	Text To Speech