SIGN LANGUAGE TRANSLATOR

A PROJECT REPORT

submitted by

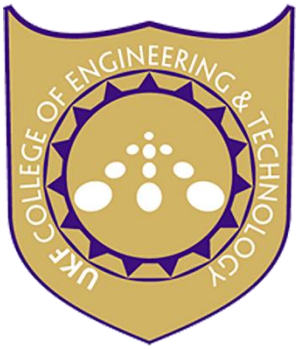
ASHIK SB
(UKP16CS014)

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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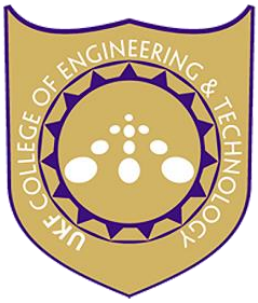

CERTIFICATE

This is to certify that the project report entitled "**SIGN LANGUAGE TRANSLATOR**" submitted by **ASHIK SB (UKP16CS014)** 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

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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.

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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