

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/10/2025

(21) Application No.202541099894 A

(43) Publication Date : 28/11/2025

(54) Title of the invention : Sign Language Translation to Text and Voice Using Machine Learning

(51) International classification	:G06N0003045000, G06F0003010000, G06V0040200000, G06N0003080000, G09B0021000000	(71)Name of Applicant : 1)Mr. Gudimella Sai Ram Address of Applicant :Assistant Professor, Department of ECE, Siddhartha Institute of Engineering and Technology, Vinobha Nagar, Ibrahimpatnam, Hyderabad, Telangana 501506 Hyderabad Telangana India 2)Ms. A.Nandini 3)Ms. B. Nagalatha 4)Ms. L.Sitara 5)Ms. M.Vasumathi 6)Ms. U.Rajalaxmi 7)Pasham Sathwika 8)Mr. B Pavan 9)Mr. G.Madhan 10)Mr. Prajwal Shastri
(31) Priority Document No	:NA	(72)Name of Inventor : 1)Mr. Gudimella Sai Ram 2)Ms. A.Nandini 3)Ms. B. Nagalatha 4)Ms. L.Sitara 5)Ms. M.Vasumathi 6)Ms. U.Rajalaxmi 7)Pasham Sathwika 8)Mr. B Pavan 9)Mr. G.Madhan 10)Mr. Prajwal Shastri
(32) Priority Date	:NA	
(33) Name of priority country	:NA	
(86) International Application No	:	
Filing Date	:01/01/1900	
(87) International Publication No	: NA	
(61) Patent of Addition to Application Number	:NA	
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

The invention titled "Sign Language Recognition to Text and Voice Using Convolutional Neural Networks (CNN)" discloses a real-time assistive communication system that translates sign language gestures into text and audible speech output. The system employs deep learning and computer vision techniques to identify and interpret hand gestures, thereby enabling effective communication between hearing-impaired and non-sign-language users without the need for wearable sensors or human interpreters. The system captures live gesture data using a camera or motion sensor, processing colour, depth, and body joint information to improve recognition accuracy. The captured frames undergo pre-processing operations such as background subtraction, Gaussian filtering, and normalization to isolate the hand region. The processed input is fed into a CNN-based recognition model trained on diverse sign language datasets to extract spatial and temporal gesture features automatically. Recognized gestures are displayed as text output and simultaneously converted to natural voice using a Text-to-Speech (TTS) module. The system achieves high recognition accuracy (above 95%) and operates with low latency, providing real-time gesture-to-speech translation. It is portable, low-cost, and adaptable, suitable for embedded platforms like Raspberry Pi or Jetson Nano, and applicable across educational, healthcare, and social domains for inclusive communication.

No. of Pages : 13 No. of Claims : 5