

Contribution of Artificial Intelligence in Speech Recognition

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Abstract: *The objective of this exploration contemplate is to exhibit a review learn about discourse acknowledgment frameworks and fake intelligence. Speech acknowledgment has developed as one of the generally utilized technologies. It encourages collaboration and correspondence with robotized machines. It facilitates the execution of day by day schedule undertakings in a successful way for the clients. Ongoing explores have uncovered the way that discourse acknowledgment is observed to be the most extreme issue, which influences the deciphering of discourse. So as to conquer these issues, scientists created distinctive measurable models .To list the conspicuous among them are acoustic model (AM), dialect show (LM), dictionary display, and concealed Markov models (HMM). They have additionally structured diverse translating techniques which are used for reasonable disentangling undertakings and compelled counterfeit dialects these deciphering strategies incorporate example acknowledgment, acoustic phonetic, and man-made consciousness.*

Keywords: *Artificial Intelligence, Speech Recognition.*

1. INTRODUCTION:

The objective of this exploration contemplate is to exhibit a review learn about discourse acknowledgment frameworks and fake intelligence. Speech acknowledgment has developed as one of the generally utilized technologies. It encourages collaboration and correspondence with robotized machines. It facilitates the execution of day by day schedule undertakings in a successful way for the clients. Ongoing explores have uncovered the way that discourse acknowledgment is observed to be the most extreme issue, which influences the deciphering of discourse. So as to conquer these issues, scientists created distinctive measurable models .To list the conspicuous among them are acoustic model (AM), dialect show (LM), dictionary display, and concealed Markov models (HMM). They have additionally structured diverse translating techniques which are used for reasonable disentangling undertakings and compelled counterfeit dialects these deciphering strategies incorporate example acknowledgment, acoustic phonetic, and man-made consciousness.

2. SPEECH RECOGNITION SYSTEMS:

Speech recognition can be cited as an approach that deals with conversion of spoken words into text. Since this technique recognizes the speech automatically it can also be called as ASR (Automatic Speech Recognition). A few of speech recognition systems use speaker independent speech recognition whereas other systems utilize training method. In the latter one, an individual speaker reads sections of text into the speech recognition system.

3. STATISTICAL MODELS OF SPEECH RECOGNITION:

3.1 ACOUSTIC MODELS (AM)

Acoustic model (AM) has emerged as one of the most prominent and widely adopted models of speech recognition. Research has proved that acoustic models of speech recognition captivate the features of the basic recognition units. Recognition units can be at one of the three mentioned levels: phoneme, syllable or word. Selecting each of these units has to undergo several inadequacies and constraints. For LVCSR (large vocabulary continuous speech recognition) phoneme is considered to be the best unit. Along with this Hidden Markov models and neural networks (NN) too are widely adopted approaches.

3.2 LANGUAGE MODEL (LM)

It is an important statistical model for speech recognition. One of the primary goal of language model is to convey the behaviour of the language. Search space for a robust and credible combination of words is optimised by this statistical model. It was developed by the assistance of CMU statistical LM toolkit.

3.3 LEXICON MODEL

This model provides the pronunciation of the words within the target speech and that has to be recognized. Thus it performs an important role in automatic speech recognition. It adopts the process of either whole-word access or decomposing entire speech into small parts which finally results in proper recognition of the speech. For example, if the speech recognition models are in native languages, we will need to mould the lexicon model also in native language for valuable and authentic results. For this artificial neural network phoneme is appropriate; the reason being, it helps in creating native lexicon from foreign lexicon.

3.4 HIDDEN MARKOV MODELS

It has been affirmed that Hidden Markov model is the most popular amongst its kind. It has succeeded in reducing the issues involved in speech classification which was a great drawback. In order to reduce the issue of accuracy in speech recognition subspace projection algorithm and weighted hidden Markov models were proposed.

4. DECODING METHODS OF SPEECH RECOGNITION

Research has proved that many decoding techniques can be used to recognize the speech. Top amongst them are acoustic phonetic method, pattern recognition method and artificial intelligence approach. They have been briefly discussed below:

4.1 ACOUSTIC PHONETIC

This approach is mainly based on locating sound and speeches. To recognize the patterns of sound, adequate labels were provided to sample sounds. Acoustic approach believes that there exists phonemes (phonetic units) and finite units within the spoken language.

4.2 PATTERN RECOGNITION APPROACH

The most common technique of speech recognition is Pattern Recognition. The two steps involved in it are pattern comparison and pattern training. It uses a well-structured and integrated mathematical framework which helps in formulating consistent representations of speech patterns. This eventually leads to optimized results. It is further bifurcated into stochastic approach and template approach.

4.3 ARTIFICIAL INTELLIGENCE APPROACH

Managed to be the most common approach for speech recognition. It can be considered as the blend of Acoustic phonetic approach and Pattern recognition approach.

It has been recognized from the studies of [1][3], that artificial intelligence is widely used in different areas, including pedestrian signals and traffic lights, robotic household equipment, maintenance systems.

5. APPLICATION OF ARTIFICIAL INTELLIGENCE IN SPEECH RECOGNITION

It has been observed from the evaluation of studies, which presented by [2] that artificial intelligence is currently being used in different fields of life, including scientific discovery and various day to day applications. Studies of [4][5] show that the approach of artificial is broadly utilized in answering machines of customer care centres and call centres. In this account, [6] claims that speech recognition software enable the computers to handle first level of natural language processing, text mining, and customer support.

6. CONCLUSION:

From above paper, it can be concluded that the applications of speech recognition are becoming extensively important and useful nowadays. In the above research we found that, speech recognition is the process of transforming the input signals (usually speech) into the well-structured sequences of words. It should be taken in consideration that algorithms should be developed for these sequences. It has been assessed that speech recognition has become one of the greatest challenges and several techniques and approaches have been developed, to overcome this issue. Besides all the most reliable and adequate approaches is artificial intelligence. In this research paper we focused on the core concepts of artificial intelligence and speech recognition systems.

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