

# Chapter 71

## Investigation of ANFIS and FFBNN Recognition Methods Performance in Tamil Speech Word Recognition

**S. Rojathai**

*Kalasalingam University, Madurai, India*

**M. Venkatesulu**

*Kalasalingam University, Madurai, India*

### ABSTRACT

*In speech word recognition systems, feature extraction and recognition plays a most significant role. More number of feature extraction and recognition methods are available in the existing speech word recognition systems. In most recent Tamil speech word recognition system has given high speech word recognition performance with PAC-ANFIS compared to the earlier Tamil speech word recognition systems. So the investigation of speech word recognition by various recognition methods is needed to prove their performance in the speech word recognition. This paper presents the investigation process with well known Artificial Intelligence method as Feed Forward Back Propagation Neural Network (FFBNN) and Adaptive Neuro Fuzzy Inference System (ANFIS). The Tamil speech word recognition system with PAC-FFBNN performance is analyzed in terms of statistical measures and Word Recognition Rate (WRR) and compared with PAC-ANFIS and other existing Tamil speech word recognition systems.*

### 1. INTRODUCTION

It is appropriately perceived that speech is the most extreme generally popular method for correspondence between individuals. There are plenteous routines for portraying the collaborations capability of speech. Ordinarily, speech code is an uncommon strategy in the field of speech preparing, which includes both speech evaluation and speech recognition. The obligation of a speech coder is to change a simple speech signal into digital structure for capable dispersion or capacity and afterward to return the

DOI: 10.4018/978-1-5225-1759-7.ch071

received signal once again to analog (Al-Akaidi, 2012). These days, speech innovation is so developed as to be beneficial for different reasonable applications. Its execution, in any case, relies on upon the availability of enough direction assets. There are plentiful applications, where the assets for the domain or dialect of concern are insignificant. Case in point, in insights applications, it is frequently unfeasible to catch the basic speech assets in advance as it is multifaceted to anticipate which dialects turn into the following ones of criticalness (Burget, et al. 2010).

Speech recognition applications are presently rising as very productive gadgets. Moreover, various intuitive speech-

## **2. RELATED WORKS**

A few current examination endeavors connected to speech word recognition are deftly examined in the following area.

Maheswari, Kabilan and Venkatesh (2010) have efficiently offered shape to a novel hybrid model by method for a totally joined disguised layer between the input state hubs and the output. A target undertaking has been developed for the neural network by utilizing an aggregate structure of numerical and neural network based classifiers. Likewise, the hybrid model of Radial Basis Function and the Pattern Matching technique have been discovered exquisitely utilized. The framework has been guided by method for Indian English word dataset holding 50 words expressed by 20 male and female speakers each. The direction models comprise of 30 words talked by a different gathering of 20 male and female speakers each. In the long run, it is made that the new framework accomplished an incredible 91% recognition accuracy precision, exceedingly better than the results of the contemporary frameworks.

A speech recognition framework constitutes a mix of different methods and calculations, each of which completes a specific capacity of understanding the crucial objective of the strategy. Speech recognition implementation might be redesigned by picking a suitable sound-related model. In Pavithra, Chinnasamy, Azha Periasamy and Murugan (2011), the attributes mining and harmonizing capacities have been performed by SKPCA with Unsupervised learning calculation and most extreme probability. SKPCA minimizes the data maximization of the model, furthermore outfits a sparse key for KPCA as the original information might be diminished by considering the weights, which recognize the vectors having most extreme influence over the augmentation. Unsubstantiated learning algorithm has been completed to perceive the suitable outline of the names and most extreme probability has been utilized to upgrade the standardized aural probability the very pinnacle of conceivable state arrangement of direction information. The test results maintain the dominance of SKPCA strategy with the inventive methodology most extreme likelihood which has yielded wealthier harvests regarding perfection in the speech recognition frameworks.

Fleissner, Liu, and Fang (2011) have keenly offered speech recognition histories and aural arrangement as a system for encouraging variety to non-local speech in verbal dialect discussion routines. In spite of outfitting a thorough depiction of aural order and location histories, in their study, two ideas, for example, speech recognition histories and sound-related classification have been utilized and evaluated in a authentic chat system utilized by unfamiliar English speakers.

Nitin Trivedi et al. (2011) have skillfully established a novel technique for mining the characteristics for speech regulation. Here, the input speech signal has been rotted into differing recurrence channels as per the time-recurrence multi-determination nature of wavelet transform. The preeminent issues in

11 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/investigation-of-anfis-and-ffbnn-recognition-methods-performance-in-tamil-speech-word-recognition/173401](http://www.igi-global.com/chapter/investigation-of-anfis-and-ffbnn-recognition-methods-performance-in-tamil-speech-word-recognition/173401)

## Related Content

---

### Employing ChatGPT for the Management of Businesses and Decision Making in the Era of AI

Nikita Jain, Rekha Dhingra and Deepa Bhardwaj (2024). *Leveraging ChatGPT and Artificial Intelligence for Effective Customer Engagement* (pp. 15-27).

[www.irma-international.org/chapter/employing-chatgpt-for-the-management-of-businesses-and-decision-making-in-the-era-of-ai/337708](http://www.irma-international.org/chapter/employing-chatgpt-for-the-management-of-businesses-and-decision-making-in-the-era-of-ai/337708)

### Building Trust and Credibility: Ethical Use of AI in the Service Industry

Mahmut Demir (2024). *Revolutionizing the Service Industry With OpenAI Models* (pp. 243-267).

[www.irma-international.org/chapter/building-trust-and-credibility/345292](http://www.irma-international.org/chapter/building-trust-and-credibility/345292)

### Automating the Generation of User Activity Timelines on Microsoft Vista and Windows 7 Operating Systems

Stephen O'Shaughnessy and Anthony Keane (2012). *International Journal of Ambient Computing and Intelligence* (pp. 35-47).

[www.irma-international.org/article/automating-generation-user-activity-timelines/66858](http://www.irma-international.org/article/automating-generation-user-activity-timelines/66858)

### Differential Evolution with Self-Adaptation

Janez Brest (2009). *Encyclopedia of Artificial Intelligence* (pp. 488-493).

[www.irma-international.org/chapter/differential-evolution-self-adaptation/10291](http://www.irma-international.org/chapter/differential-evolution-self-adaptation/10291)

### Ontology Alignment Techniques

Marcos Martínez Romero, José Manuel Vázquez Naya, Javier Pereira Loureiro and Norberto Ezquerro (2009). *Encyclopedia of Artificial Intelligence* (pp. 1290-1295).

[www.irma-international.org/chapter/ontology-alignment-techniques/10406](http://www.irma-international.org/chapter/ontology-alignment-techniques/10406)