



**Visvesvaraya Technological University**

BELGAUM, KARNATAKA

**ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ**

ಬೆಳಗಾವಿ, ಕರ್ನಾಟಕ

A PROJECT REPORT ON

**Speaker Independent Speech Recognition System Based  
On Cepstral Coefficients and Dynamic Time Warping  
Technique**

**(Sponsored by K.S.C.S.T)**

Submitted to Visvesvaraya Technological University in partial fulfillment of the requirement for the award of Bachelor of Engineering Degree in Computer Science and Engineering

**Submitted by**

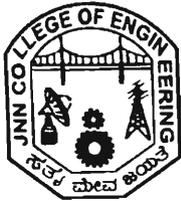
Ganesh Kumar.H.A.	4JN06CS401
Keerthi Kumar.D.	4JN05CS020
Lohith M	4JN05CS023
Pawan T	4JN05CS034

**Under the guidance of**

**Mr. Sanjeev R Kunte**, B. E, M.Tech (Ph D)

Asst. Professor, Dept of CS&E,

JNNCE, Shimoga.



Department of Computer Science & Engineering  
Jawaharlal Nehru National College of Engineering

Shimoga - 577 204

JUNE 2009

# **ABSTRACT**

Intelligence is the capacity to 'learn' & recognition is the first sign of 'intelligence' observed in human beings. One such major recognition in humans is speech recognition. It helps for easier communication. Nowadays human computer interaction is flourishing in greater rate due to the need of user friendly, highly interactive and natural systems for day to day life. Use of speech recognition system in various applications helps the application to be more interactive and natural.

Due to this, in this project report a speech recognition system for limited vocabulary is proposed and implemented the developed speech recognition system can operate in real time and is speaker independent. In the proposed system the user voice is captured through microphone and it is filtered for any unwanted noise present. The useful voice from the sample speech signal is detected and the signal is pre-emphasized to improve the signal into the noise ratio. Cepstral coefficients based on linear predictive analysis of speech signal are found which are used as feature of the signal. Dynamic time warping technique is used for classification and recognition of the unknown word. The system is tested for different words from many users and the results are found satisfactory and a good recognition rate is obtained.