# Introducing Digital Pen for Different International Numeral Pronunciation Skills @ Pre-School Learners

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#### **Abstract**

English is a language which has great rich and influence. It is taught all over the world under many different circumstances. English contains a number of sounds and sound distinctions not present in some other languages. Speakers of languages without these sounds may have problems both with hearing and with pronouncing them. Some students may have very different cultural perceptions in the classroom as far as learning a second language English is concerned. Cultural differences in communication styles and preferences are also significant. For example, teachers in Pune, Bangalore hold the Language Proficiency Assessment for Teachers or their learning method since beginning is English. Those who work in private language schools may from commercial pressures, have the same qualifications as native speakers.

In this paper we proposed to develop a digital pen for pre-school learners to teach and introduce different numeral pronunciation skills in international forms and tried to turns weakness in pronunciation skill into strengthens. Most people who teach English are in fact not native speakers. Mostly they are state school teachers; as such they hold the relevant teaching qualification of their areas, usually with a specialization in teaching English.

#### **Kevwords**

PDA, OCR, MFCC, DTW

# I. Introduction

The digital smart pen has the capabilities to help user pronounce text, by verbal means. Also, this invention has the operations to do a spell check to text, to assist user in correct spelling of the word or words. This invention can be helpful for students, teachers, or people in mathematic environments.

A digital electronic pen that provides user withpronunciation and spell check capabilities the smart pencan hold at least 300,000 Words inside the CPU by simplyscanning the Word of choice, the user can receive a verbalresponse from the pen, or the user can speak into the pen'smicrophone to request a correct spelling of unknown Word. The digital smart pen is useful in and pronunciation, and Word meanings if needed [1].

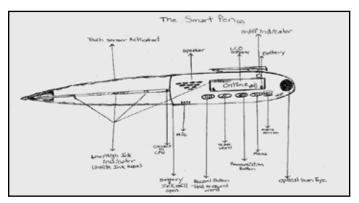


Fig. 1: Internal Architecture of a Digital Pen

### **II. Description of Prior Art**

The digital pen is an electronic instrument that assists the user in Word recognition and pronunciation. A digital pen is a computer input device that allows the user to capture handwriting strokes inside the device. The strokes are then uploaded to a computer using USB or Bluetooth. The computer covertsthe strokes into a viewable filewithin the CPU, the digital pen will store and add digital asneeded. Instead of user stopping task, just simply pressingthe pronunciation button to access the digital audio,a verbal response from the user into the digital pen microphone, therefore, a digital verbal response from pen will bespoken. The digital pen will store and transfer any writtentext into a verbal response, with processing power to saveunknown data to its storage unit. The user can continue workwithout the aid of a dictionary. There exists the need for a quickerresponse and accessible net-Work to check and enunciateunknown Words. With a digital pen, handwriting or drawings can be stored in a receiver for future use. Digital pens are used with optical character recognition (OCR) software that recognizes handwritten characters. Some pens record audio as well as handwritten notes. These pens use ink and special paper to write on. Some digital pens can read text and bar codes and store the information until you decide to download it. These pens begin recording as soon as you place the tip on the paper. Some digital pens are used with mobile devices such as PDAs and tablet PCs to make it easy to take notes.

#### III. Experimental Result: Database

Symbols in English	English pronunciation	Spanish Pronunciation	Swedish Pronunciation	French Pronunciation
0	Zero (zeer-ro)	Diez, Decena, cero	noll, nolla	zéro
1	One (wun)	Uno, Una, un, oo-no	en, ett, ena	un
2	Two (too)	dos, Par, dose	tva, tu	deux
3	Three	Tres, trace	Tre, Trea	trois
4	Four (for)	Cuatro, Kwat-ro	fyra, fyrtal	quatre
5	Five	Cinco, Sink-o	Fem, Femma	cinq
6	Six (siks)	Seis, saze	Sex, Sexa	six
7	Seven	Siete, see-yet-eh	Sju	sept
8	Eight (ate)	Ocho, och-o	atta	huit
9	Nine	Nueve, new-eh-veh	nio, nia	neuf

### A. Numeral Recognition System

There are several kinds of parametric representation of the acoustic signals. Among of them the Mel-Frequency cepstral Coefficient (MFCC) is most widely used. We have developed the recognition system using MFCC and DTW [2]

B. Databasefew people recorded the number one in English and the same word in Spanish, Swedish and French respectively. Some of the MFCC Features extracted of the English Numerals are shown in the figures below (Fig. 1 and Fig. 2)

C. For accuracy in the numeral recognition, we need a collection of utterances, which are required for training and testing. The Collection of utterances in proper manner is called the database. The age group of pre-school learners for the collection of database ranges from 04 to -07. The vocabulary size of the database consists of English numerals 0-9

D. Then performed these mentioned steps for speech recognition Acquisition Setup, Feature extraction, Mel-Frequency Filter bank, Discrete Cosine transform, delta energy and delta spectrum

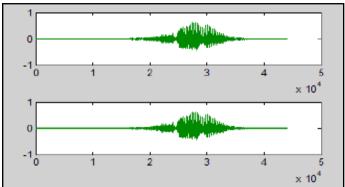


Fig. 2: Plot For English "One" Numbers and in the Same for Spanish Language "One"

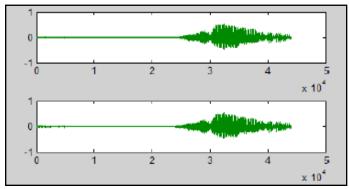


Fig. 3: Plot for English "One" Number and in the Same for Swedish Language "One"

#### **IV. Benefits**

- The present invention provides an educational solution to overcome misspelled Words, and a Word pronunciation. This pen is storing all English numbers and its pronunciation skills in these 3 languages and pronounces word as user will select language option.
- 2. The user no longer has to search for English native speakers or regular dictionaries.
- Introducing global languages to pre-school learners by learning by doing things
- Pre-school learners having different cultural and Cultural differences in communication styles and preferences are also significantly reduced.
- There is nice turn for pre-school learners to give the global

#### V. Conclusions

In this paper we are going to discuss the new features that we can design and put into digital pen and we can use it to teach to pre-school learners English and different international pronounce skills. The following are the benefits

- This is best effective e-learning tool e-digital pen for preschool learners as like a normal writing pen.
- 2. Introducing international languages to pre-school learners.
- 3. To help pre-school learners for different pronounce skills.
- 4. Portability of this digital pen.
- Giving a real view of global vision, cultural, art and history and make an interactive learning and career option.
- Real true term that is "The digital pen is mightier than the sword"

# **VI. Conclusion**

In this paper we have discussed the new features that we can design and put into digital pen and we can use it to teach the pre-school learners. This is best effective e-learning tool e-digital pen for pre-school learners as like a normal speaking and teaching pen.

# VII. Acknowledgment

It is my pleasure to get this opportunity to thank my beloved and respected Guide and who imparted valuable basic knowledge of Electronics specifically related to Speech Processing

#### References

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Mr. Zende Sachin Sahebrao received my M.Sc. degree in computer science from Dr. BAM University, Aurangabad, Maharashtra India in 2004 and received Master of philosophy degree in same subject in 2010 from YCMOU, Nasik. I am going to award my Ph.D. degree in the computer science subject titled "Handwritten Marathi numeral classification using structural features of digital pen" from Shri. Jagdish Prasad

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I worked as a lecturer in the computer science subject and having 9 years teaching experience of under graduate and post graduate subject. My research interests include handwritten character recognition, OCR, digital signal processing, data base management system and cloud computing.