

**THE PRONUNCIATION ACCURACY OF INTERACTIVE
DIALOG SYSTEM FOR MALAYSIAN PRIMARY SCHOOL
STUDENTS**

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University Utara Malaysia

2012

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DIALOG SYSTEM FOR MALAYSIAN PRIMARY SCHOOL
STUDENTS**

A project submitted to the Graduate School in partial
Fulfillment of the requirements for the degree of
Master of Science (Information Technology)
University Utara Malaysia

By

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ABSTRAK

Projek ini adalah untuk mengkaji ketepatan pengecaman suara dalam sebutan Bahasa Inggeris menggunakan sistem yang dibina. Penggunaan enjin pengecaman suara yang sedia ada dalam sistem dialog interaktif, untuk digunakan oleh pelajar sekolah rendah sebagai bahasa kedua di Malaysia dalam literasi pendidikan. Ia dapat memupuk minat pelajar menggunakan ICT dalam pembelajaran serta mendorong pelajar untuk menjadi lebih yakin dalam sebutan dan bacaan tanpa bantuan dari guru semata-mata. Pengajaran dan pembelajaran menggunakan komputer ini juga dapat meningkatkan tahap keupayaan pelajar belajar membaca dengan sebutan yang betul dan tepat kerana sistem ini dapat mengenalpasti sebutan yang tepat atau salah. Pembelajaran menggunakan komputer ini juga akan meningkatkan keupayaan pelajar membaca lisan dengan menggunakan sistem ini di dalam komputer. Kajian ini dijalankan di Sekolah Kebangsaan Sungai Berembang yang melibatkan 16 orang pelajar perempuan dan 18 orang pelajar lelaki tahun dua yang berusia lapan tahun. Sudah tentunya pelajar-pelajar ini mempunyai pelbagai pelat sebutan bacaan, kebolehan dan pengalaman dalam bahasa Inggeris kerana bahasa ibunda mereka adalah bahasa Melayu. Objektif utama kajian ini ialah untuk mengenalpasti ketepatan menggunakan sistem pengecaman suara yang sedia ada bagi pelajar yang menggunakan Bahasa Inggeris sebagai bahasa kedua dalam literasi pendidikan di Malaysia. Objektif khusus kajian ini adalah untuk mengenalpasti keperluan penggunaan sistem pengecaman suara dan menilai ucapan dialog menggunakan sistem tersebut berasaskan kejituan bacaan. Teknologi pengecaman suara ini bertujuan untuk membantu guru dalam menjalankan pengajaran dan pembelajaran di sekolah agar dapat meningkatkan keupayaan dalam kesedaran fonemik kanak-kanak, pembangunan perbendaharaan kata, pemahaman perkataan, dan pembacaan yang lancar. Kaedah yang digunakan terbahagi kepada lima peringkat seperti berikut iaitu membina Kerangka Membangunkan Senibina Sistem, Analisa dan Rekabentuk Sistem, Membina Sistem (prototaip) dan Pemerhatian semasa menguji sistem. Hasil daripada kajian dan pelaksanaan terhadap pelajar didapati 85% IDS ini berjaya membantu dengan berkesan penguasaan sebutan Bahasa Inggeris selepas menggunakan sistem ini.

ABSTRACT

This project is to examine the accuracy of using existing speech recognition engine in interactive dialog system for English as second language (ESL) Malaysian primary school student in literacy education. Students are interested to learn literacy using computer that encompasses spoken dialog as it motivates students to be more confidence in reading and pronunciation without depending solely on teachers. This computer assisted learning will improve student's oral reading ability by using the speech recognition in IDS. By using the system students are able to learn, to read and pronounce a word correctly independently without seeking help from teachers. This study is conducted at Sungai Berembang Primary School involving all 16 female and 18 male standard 2 students aged 8 years old. These students possess various reading pronunciation, abilities, and experience in English language with Malay language as their first language. The main objective of this study is to examine the accuracy of using an existing speech recognition engine for ESL Malaysian students in literacy education. The specific objectives of this study are to identify requirement and evaluate speech recognition based dialog system for reading accuracy. This kind of speech recognition technology is aiming to provide teacher-similar tutoring ability in children's phonemic awareness, vocabulary building, word comprehension, and fluent reading. This method has five stages. This method enables to construct a framework. Develop system architecture then analyze and design the system. It also builds the prototype for the system upon the system implementation which will be used in this study is the System Development Research Method. Lastly its observe, test the system and the results of the study and implementation of IDS students found 85% of this has helped the English language after using this system.

DEDICATION

I humbly thank **Allah** Almighty, the Merciful and the Beneficent, who gave me health, thoughts and co-operative people to enable me achieve this goal.

I wish to dedicate this work to **Holy Prophet Muhammad** (Peace be upon him) and his companions who laid the foundations of Modern civilization and paved the way for social, moral, political, economical, cultural and physical revolution.

To my supervisors, **Madam Zahurin Bt Mat Aji @ Alon** and **Dr Husniza Bt Husni**, who always stood beside me and helped me to do my best, for the time they spent to guide me, I will always be their student throughout my life.

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LIST OF ABBREVIATIONS

ASR	Automatic speech recognition
ART	Automatic Reading Tutor
ESL	English as second language
ICT	Information Communications Technology
IDS	Interactive Dialog System
TTS	Text to speech

CHAPTER ONE:INTRODUCTION

1.0 BACKGROUND

In the last few years, research in the field of interactive dialogue systems has experienced increasing growth (Pietquin & Renals, 2002). The automation of dialogue strategy design is a leading domain of investigation, and the treatment of dialogue system design using the formalism of Markov Decision Processes (MDPs) and Reinforcement Learning (RL) was proposed by Pieraccini and Levin (Choi, 2004; Levin, Pieraccini, & Eckert, 2000) .

To obtain a fully automatic procedure, the learning agent needs real interactions with a user through an automatic speech recognition (ASR) system, a large amount of corpus data or a sequence of simulated interactions with a virtual user (Dahl & Claesson, 1999). The success of a spoken dialogue system depends crucially on a carefully designed interface that can overcome the limitations of current spoken language technology (Burgt, Andernach, Kloosterman, Boston, & Nijhol, 1996; Kamm, 1995).

This system is an interactive application multimedia for ESL students. This project is about to identify requirements for automatic speech recognition and developing speech recognition based interactive dialog system for reading in English.English is one legacy of more than a century's worth of British colonial rule in Malaysia. It is the most important foreign language in Malaysia and is used extensively in practically all aspects of daily life, from conducting business transactions to labeling products to writing jingles for television advertisements. Both English and Malay language, the official language in Malaysia, play a vital role in binding together a multicultural nation made up largely of three separate and distinct races; Malay, Chinese and Indians. Even though differ in appearance and mother tongue, these groups rely on one or both languages when communicating outside their ethnic groups (in some cases even within them). Both languages help to unite people and create a unique national consciousness (Murugesan, 2003).

English language has been recognized as a global language and an international lingua franca. Despite the fact that there are more people who use English as their second or foreign language, its impact on culture and identity remains an under-researched area (Lee, Lee, & Wong, 2010). In Malaysia, English has a rather complex and ironic status. It is an “inherited”

The contents of
the thesis is for
internal user
only

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