Information searching through voice to text conversion at call centers

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Declaration

I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

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Dedication

I would like to dedicate my dissertation to my parents for encouraging me to follow Master Degree of Science in Information Technology.

Acknowledgement

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Abstract

A call center is a central place where Customer Care people handle queries of customers over the telephone to fulfill their needs. Information searching delay is an increasingly problem in a call center because of multiple subsystems in operation. Delay of a one customer may lead to dissatisfaction of the others due to queue for services. This will affect to the call centers key performance indicators negatively. We have conducted our research to reduce the thinking time and key board entering time by using voice to text as the main technology. This research uses several technologies namely capturing users' key strokes, information categorization and focusing web browser's information as a response to a keystroke other than voice to text. Our applications prime goal is to reduce the queues for services and increase the customer satisfaction by reducing the service delay by using voice to text technology.

Our application is a standalone application which is not needed to install and uses .NET framework and NAudio library for enhancing and converting voice signal into text. Our application is consisted with a prediction algorithm which is capable for correcting falsely recognized text. This will increase the accuracy of the recognized sentences and this will lead to better information searching functionality. After the conversion, application will perform the searching and categorization by using naïve bayes algorithm and HTTP communication which will not lead to any security constraints in an organization because of no need any port opening requirement with the support of content management system which is managed centrally and loosely coupled with the desktop application.

Application has the capability of maintaining consistence searching and categorization functionality in a case of sound input failure by taking user's key inputs instead of sound inputs. Users of the application no need to follow highly time and human memory consuming file menus or hyperlinks. Categorization algorithm will proposed the most probable locations of the required information.

Application was tested with several users and the accuracy of the information categorization was measured by taking a sample content from the call centers technical FAQ site as the metadata. It was 90% accurately categorized the text in to

groups and subgroups. Although voice to text conversion accuracy is varying with the sound cards performance, our prediction algorithm will increase the accuracy of the voice to text conversion than the normal voice to text conversion mechanisms. Finally, application was 100% successfully queried the information from content management system via HTTP communication and display it on the web browser.

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