APPENDIX C: APPLICATION SPECIFICATIONS FOR VOICE-CONTROLLED WEB BROWSING FOR THE ELDERLY

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# Introduction

Specifications are used to guide the development of an application. The specifications include application functionality requirements and constraints and assumptions that affect the application design.

# APPLICATION SPECIFICATIONS

## Application requirements

Functionality requirements indicate the required application functionality. These requirements direct the application design.

The application shall:

* Be designed as a web application and deployed using a local host address.
* Be composed of specifically designed web pages.
* Consist of voice commands which control browser navigation.
* Utilise existing voice recognition libraries.
* Be designed to illustrate and identify efficient referencing techniques for web browsing for the elderly.
* Employ various feedback methods to assist users.
* Be compatible across different web browsers.
* Be developed for laptop or PC use.
* Require users to use a headset and microphone to use the application.

## Constraints and assumptions

The constraints refer to design constraints and are:

* Most elderly people are not computer literate.
* The application will use voice as a primary means of input.
* Existing voice recognition libraries will be used for the voice commands. This reduces the accuracy of speech recognition as no voice training is performed.
* Difficulty in finding elder users to test that are willingly and have sufficient hearing, vision and hand mobility.
* Users must not be heavily accented as this affects the accuracy of the speech recognition [1].
* The web application will only be deployed in Mozilla Firefox as certain JavaScript functions used for voice navigation are not supported in other web browsers.
* The project design and implementation is limited to 7 weeks.
* Cost is a considerable factor which will be minimised through the user of Open Source Software (OSS) and freeware.

The following assumptions are presumed during the application development:

* Most elderly users are computer illiterate.
* Complex implementations may require developer assistance during testing.
* Elderly users have adequate vision to use the web application.
* Elderly users are able to manually open the web application.
* Testing environments have minimal noise as ambient noise affect the performance of speech recognition [2].

# CONCLUSION

The web application will designed using voice commands to control browser navigation. Different referencing techniques will be applied to the application to determine the most efficient technique. Many elderly members of the community are computer illiterate and there may be some difficulty in obtaining a sufficient number of elderly users to test. Users with heavy accents affect the accuracy of the speech recognition. In addition, it is assumed that testing environments will contain minimal noise as noise levels within the surrounding environment affects the accuracy of speech recognition.

# references

[1] Anderson S, Liberman N, Bernstein E, Foster S, Cate E, Levin B. *Recognition of elderly speech and voice-driven*

*document retrieval.* Dragon Systems, Inc, 1999 IEEE, pp 145.

[2] Baker M J, Pinto F D. *Optimal and suboptimal training strategies for automatic speech recognition in noise, and the*

*effects of adaptation on performance*. Dragon Systems, Inc, 1986 IEEE, pp1.