APPENDIX I: FUTURE WORK ON VOICE-CONTROLLED WEB BROWSING FOR THE ELDERLY

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# Introduction

Speech recognition significantly increases the usability of the internet through voice-controlled web browsing [1]. Although speech recognition is a useful tool, various techniques can further be applied to improve the efficiency and accuracy of this software tool. In addition different graphical annotations can be considered to improve the usability of the application. The application functionality can further be applied to different types of application environments to improve the usability of these systems for the elderly.

# IMPROVEMENTS

An algorithm will be designed for selecting specified text to be spoken for the link name referencing technique. This would improve the efficiency of the technique and eliminate the task of manually selecting words. Alternatively users will be allowed to say a complete sentence and a function will be designed to determine when certain words are spoken. A “smart” command analyser will be incorporated into the application to accept alternatives to specified voice commands. For example, “back” and “backwards” would result in the same command being executed.

Specific sections of the website will be annotated using different colours. This technique of accessing web page sections by colour will be investigated to determine if the technique would improve the clarity and accessibility of sections. Additionally, investigations into techniques for enlarging certain components on the web page will be conducted. This will assist users that have poor eye sight. A combination of these techniques will be considered for improving the usability of web browsing for the elderly.

Thereafter the web application will be made compatible across all web browsers and operating systems. Possibly through the use of a browser plug in or add on. This would substantially broaden the range of users. To improve the performance and accuracy of the web application, a stand-alone speech engine will be incorporated into the application. The engine will be trained specifically for the elderly and explicitly for male and female voices.

Speech recognition will be extended to enable users to verbally enter a web address into a browser or launch a web application from the desktop. Speech recognition will be applied to different types of websites to determine which techniques are most efficient for different types of websites. In addition, speech recognition will in future be applied to software applications commonly used by the elderly such as Skype, electronic payment systems, prepaid meter systems, etc. This is extremely beneficial for the elderly and improves the usability of these system.

# CONCLUSION

Improvements to techniques implemented will be investigated. Such as the design of an algorithm to automatically select text for link name referencing and different annotation techniques for web page components. Speech recognition accuracy can be improved by incorporating the use of a speech engine that can be specifically trained for the elderly. The speech recognition functionality and feedback methods can further be extended to various types of websites and systems to improve the usability of these systems for elderly users.

# 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.