Computing for Human Services

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Electrical and Computer Engineering-IIUM University

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Chapter 35

Speech to Sign Language Interpreter System (SSLIS)

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35.1. Introduction

In the US, the number of deaf and hard of hearing people is estimated to be more than 8.6% out of the whole population wherein 5.6% out of them are in the age vicinity of 3 to 34 years old [7]. The commercial market was and still working on developing software that could fill the gap between deaf and nondeaf communities in the sense that it facilitates the communication amongst them and helps deaf people to improve their quality of life through translating the spoken speech to text and sign language. In this context there is only one such software that is already commercially available in the market; however, it poses a lot of burden on the deaf people since they have to pay a sizeable amount of money to purchase it apart from the fact that they would always be restricted to the developer to pay extra money for any updates [10]. Accordingly, the main motive for developing our software is to tackle this very problem and to attract the researches attention to this area for the benefit of deaf people. Figure 1 depicts the basic structure of our software. Live uttered input speech is captured through microphone then it is translated to text through some speech recognition engine. The speech engine we manipulated for this purpose is the Sphinx 3.5. The recognized text will be input to an ASL database on a word basis looking for a match. The database contains a certain number of prerecorded video signs where mainly there is one video clip per each basic word. If match occurred, the equivalent ASL translation will be displayed following the Signed English (SE) manual as a parallel to English rather than following the ASL syntax. Otherwise, the word will be fingerspelled. Finally, both recognized text and ASL translation will be displayed concurrently as a final output.