ASR TECHNOLOGY FOR IMMEDIATE INTERVENTION TO SUPPORT READING FOR DYSLEXIC CHILDREN

H. Husni, Z. Jamaluddin

Universiti Utara (MALAYSIA)

Reading is an essential skill towards literacy development and thus help should be provided so that children can master the skill at early age. For dyslexic children, mastering the skills is a challenge. It has been widely agreed that the theory behind such difficulties in reading for dyslexic lies in the phonological-core deficits. Support has been given in many ways to dyslexic children to teach them to read from teaching using various multi-sensory methods to using computer-based applications which include animated characters and text-to-speech (TTS) technology. In such applications, although stimulating, requires the children to call for help by pressing custom-made buttons on the computer screen. Often, such an application requires the dyslexic children to be aware of their mistakes and be able to judge when help is needed. They too are just reluctant to ask the computer for help. Hence, such technology does not provide immediate intervention to correct any reading failure. It is therefore worth to look at the promising automatic speech recognition technology (ASR) to provide such intervention. Hence, this paper gives an overview of the use of ASR to facilitate immediate reading intervention which is the key element of remediating reading among dyslexic children. For such intervention to work, data on reading mistakes and patterns are observed and collected in audio format. The data serve as training and testing samples for an ASR to train on. An observation was carried out in two public schools participated in the study to record dyslexic children's reading in Bahasa Melayu (BM) and observe error patterns and their behaviours toward reading. A total of 10 dyslexic children are involved and a total of 6384 utterances from a set of selected words have been gathered and analysed. Data are grouped into error type categories and the analysis performed gives 'vowel substitution' as the most frequent error made (20%). The significant findings can be of interest of special education teachers or parents to devise and use suitable approach to correct reading mistakes often made by dyslexic children. The findings also contribute to the development of a suitable and well-tuned ASR model focusing on dyslexic children reading aloud in BM.