USING HIDDEN-MARKOV MODEL IN SPEECH-BASED EDUCATION SYSTEM FOR THE VISUALLY IMPAIRED LEARNER

A. Azeta, C. Ayo, N. Omoregbe, V. Osamor

Covenant University (NIGERIA)

Speech-based eEducation technology allows users to access learning content on the web by dialing a telephone number. Speech applications in the area of education are developed mainly for the visually impaired to address the limitations of user interface of a mobile learner in accessing web learning resources. However, with the proliferation of learning resources on the web, using telephone to find suitable content has become a rigorous task for speech-based online learners to achieve better performance. The problem of finding content suitability (FCS) with speech elearning applications is more complex when the sight impaired learner is involved. It is convenient to use existing mobile speech-enabled elearning applications, but it can be extremely slow when the user is forced to drill through several layers of options before finding exactly what he/she wants.

There is therefore the need to have sufficient attributes of structural navigation and content adaptability based on learner's profile to address the FCS problem. Nevertheless, the adoption of Hidden markov model (HMM) for interface and interaction design is required to provide easy navigation and adaptation in speech-enabled learning towards solving the FCS problem. The objective of this study is to provide a design and implementation of a HMM-based speech interactive education also known as intelligent voice-enabled eEducation system (iVeES). The system will be useful especially for the physically challenged students such as the visually impaired. It also offers an alternative platform of learning for the able-bodied learners.

keywords: adaptation, case-based reasoning, eeducation, e-learning, hidden markov model and voicexml.