Abstract

The purpose of this research is to mine a large set of heterogeneous audiology data to create a decision support system (DSS) to choose between two hearing aid types (ITE and BTE aid). This research is based on the data analysis of audiology data using various statistical and data mining techniques. It uses the data of a large NHS (National Health Services, UK) facility. It uses 180,000 records (covering more than 23,000 different patients) from a hearing aid clinic. The developed system uses an unconventional method to predict hearing aid type for a patient and it can be used as a second opinion by audiologists for complex cases. After modifying the system to take account of the feedback from a professional audiologist, the success rates obtained were in the ranges 63 to 66 percent. In this research an automatic system was developed to choose between an ITE or a BTE hearing aid type with an explanation facility that can be used as a second opinion by audiologist in cases where the choice of an ITE or a BTE hearing aid is not clear cut. This analysis of audiology data and DSS will provide supplementary information for audiology experts and hearing aid dispensers. This type of system may also be of interest to manufacturers of hearing technologies in using as a ready means for their telephone customer services staff to check data, discovering data in audiology records will also be good for general awareness about the suitability of hearing aid type.
References


**Index Terms**

Computer Science

Artificial Intelligence

**Keywords**

ITE (in the ear) hearing aid; BTE (behind the ear) hearing aid; decision support system; Naïve Bayesian analysis; F-score.