HAO: Hearing Aid Ontology

The first ontology about the hearing aids collecting all the existing knowledge on these medical devices

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INTRODUCTION

Hearing loss is the partial or complete inability to detect sound in one or both ears. This disorder is very common and can be associated with other pathologic expressions. The hearing loss plays an important role in the life of individuals and it is defined as social problem because it is a communication barrier and language development impediment. The most common treatment for it is the hearing aid that makes sound audible to the people affected by an hearing loss.

ONTOLOGY

The HAO is built around the central concept of 'Hearing Aid'. The classes of the HAO reproduce the technical characteristics of hearing aids.

The ontology is free available here https://github.com/ausilianapoli/HAO-Hearing-Aid-Ontology.

In the class hierarchy the name of the root class is the qualified name of the class `Hearing Aid` in the HIO from which the proposed ontology is derived.

The ontology contains 6 object properties and 5 data properties. These are useful to define some classes as existential restrictions.

HAO has been developed in OWL 2 using the *Protégé* editor and classified using the `Pellet`, `FaCT++ 1.6.5`, and `HermiT 1.4.3.456` reasoners.
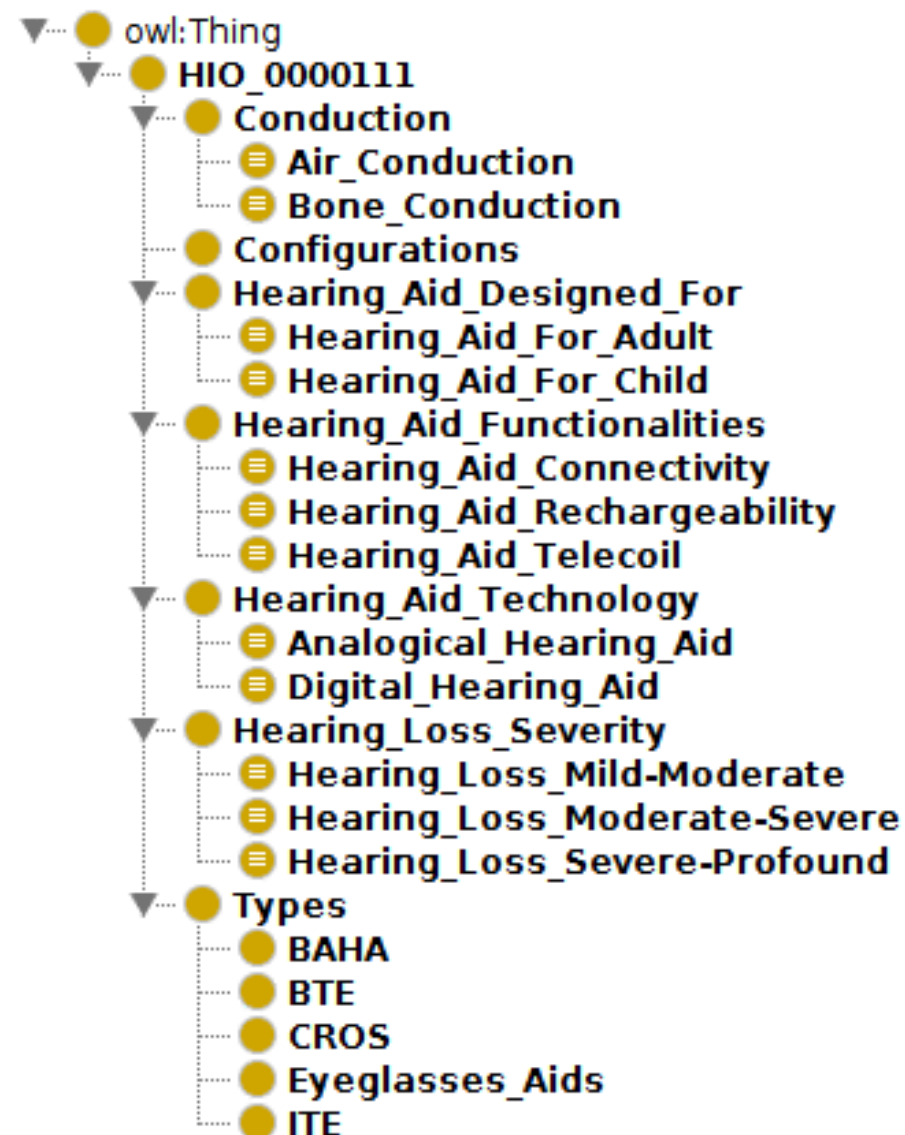
USE CASES

In the field of hearing aids, there are two parts (i.e. clinicians and patients) separated by the hearing aid dispenser that is the most technical figure in this context. The clinicians take care of their patients evaluating the presence and the entity of the hearing loss and suggesting the type of a hearing aid. Next, the patients address their trusted hearing aid dispenser that offers them the best solution. In this process both clinicians and patients benefit from the HAO: the former could suggest specifically a hearing aid configuration and also a model based on the feedback of all own patients over time; the latter, instead, could understand better and explore the hearing aid subject, and independently compare the technical characteristics of own hearing aid with the others on the market.

REFERENCES

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