

Development of a semantic model for Cerebrovascular Accident (CVA) Patients

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Abstract:

In current times, the amount of acquired data is quite superior to our human processing ability. However, in order to have computers aid researchers in this task, the information must be not only in a computer readable format, but standardized in case the data ranges different knowledge areas (like the biomedical field). These can be provided by the use of semantic web technologies. The merits of it's application in the biomedical field has already been observed by research groups¹⁾.

Besides being one of the most common death causes in Portugal, cerebrovascular accidents(CVA) are also a leading cause of significant disability. 15 to 30% of CVA patients are permanently disabled and 20% require institutional care at 3 months after onset. Some clinical, demographic and genetic factors are known to be associated to stroke recovery processes⁴⁾, but there's still need for further research in this area.

The objective of this project is the creation of a semantic model for cerebrovascular accidents that allows the integration of clinical and genetic data and the automated interconnection with outside resources (like SNOMED CT) in order to evaluate their individual and combined weight in the patient recovery score. This project also uses graph databases, due to their flexibility, considering a possible future studies of CVA patient data without making the present data obsolete.

For this task we selected Protégé-OWL for the semantic modeling, and Neo4J as the graph database engine. This database will be populated with genetic, clinical and demographic data of 416 CVA patients provided by Instituto Nacional de Saúde Dr. Ricardo Jorge (INSA).

References:

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