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Annotation of Clinical Datasets Using openEHR Archetypes

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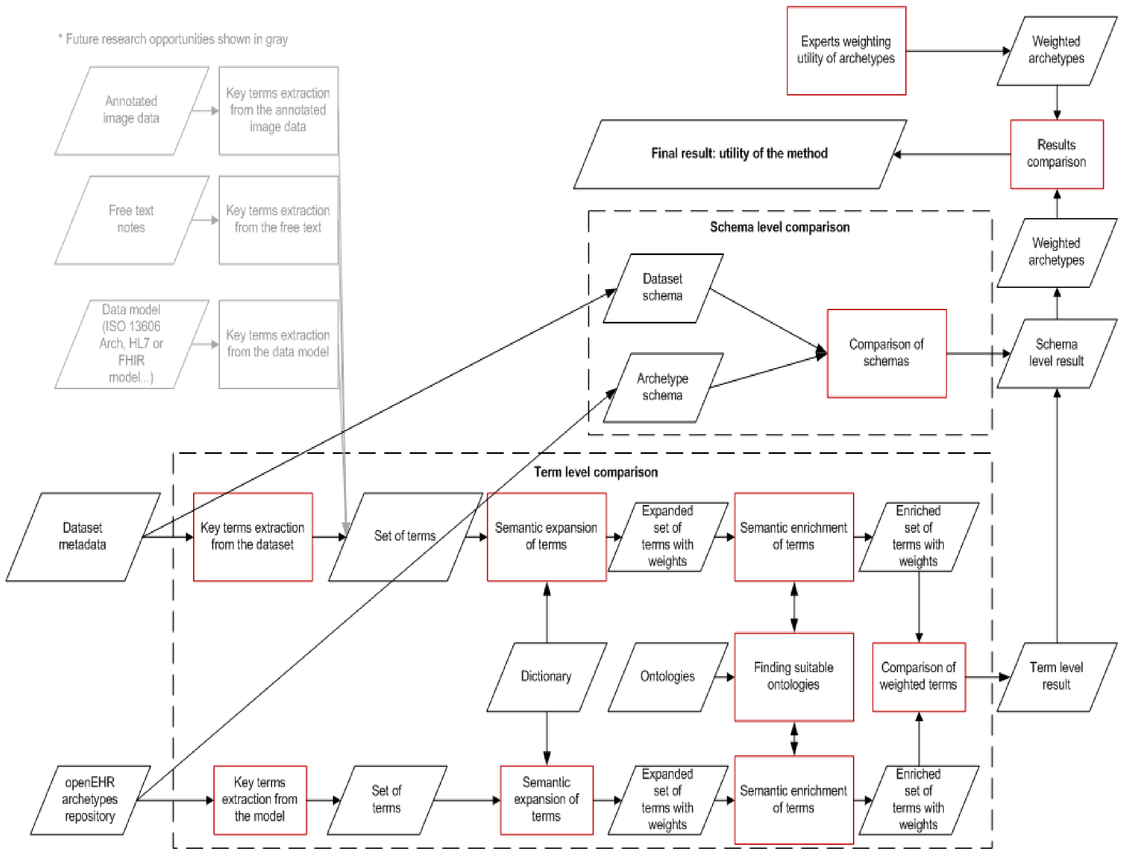
Background

The proposed study will conduct comprehensive evaluation of available methods currently used for annotation of datasets and other sources of clinical information and select and experimentally test methods suitable for annotation of clinical datasets using openEHR archetypes. Testing will include both individual and composite methods. The key contribution of this work will be to evaluate standard based information models, in particular openEHR archetypes, as the means to annotate clinical datasets and to make a significant step forward towards defining a method suitable for this process. openEHR data models are selected because of their ability to comprehensively describe clinical information and because of their ontology-like structural characteristics.

The output of this project is expected to aid integration of clinical data and models for research purposes by enabling automated selection and standardised access to clinical information. The example of the project that could benefit from this is VPH where the solution can be used for connecting physiological models to the real patient data, resulting in either individualisation or generalisation of the testing. This will further aid in achievement of “digital me” vision and support for “a more personalized diagnosis, prognosis, treatment planning and monitoring, and to develop new drugs, therapies, medical devices, assistive and diagnostic technologies that are optimized for specific groups of patients” [1].

Method

A comprehensive review of available methods will be followed by a set of experiments comparing quantitative outputs of the methods with results produced by experts. The experts will be asked to compare clinical dataset schema and openEHR archetype(s) and use scale to quantify their opinion on how good match an archetype is for a given dataset. Then, a software tool will be developed that will allow for methods to be tested in silico.

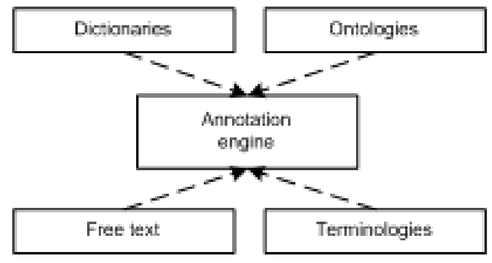


Potential use of methods for deciding on similarity of datasets and openEHR archetypes

The method where experts are asked to rate validity of a method is common in experiments and in particular in the fields where no gold standard method exists.

Summary

It is considered that the topic, because of its novelty and openEHR as a ground breaking standard, will attract considerable interest from academic community and motivate further development in the field.



Information sources used by the engine

The final result will make annotation of clinical datasets an automated process enabling better utilization of clinical information in research projects.

References

[1] Hunter, P., Coveney, P. V., de Bono, B., Diaz, V., Fenner, J., Frangi, A. F., … Viceconti, M. (2010). A vision and strategy for the virtual physiological human in 2010 and beyond. Philosophical Transactions. Series A, Mathematical, Physical, and Engineering Sciences, 368(1920), 2595–2614. doi:10.1098/rsta.2010.0048

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