Medtex: Unlocking the value of medical narratives

Medtex is an artificial intelligence (AI) technology platform to 'unlock' key information in medical narratives for clinical decision support and secondary use

The challenge

Medicine is one of the most information intensive fields. Numerous professionals including doctors, specialists and allied health care professionals together with pathology and diagnosis centres, all produce patient health records.

Patient records contain valuable information for clinical decision support and secondary use (e.g. population health monitoring and reporting) however searching and analysing health data poses unique challenges for healthcare professionals.

The majority of patient health reports including clinical examination reports, nursing notes, discharge summaries and death certificates are recorded in unstructured fragmented free-text, often abbreviated, grammatically incorrect, or with spelling errors. Medical concepts are often expressed using inconsistent vocabulary e.g. hypertension versus high blood pressure with some concepts being implicit e.g. haemodialysis implies renal failure. Therefore, manual inspections and experience-based judgements from clinical staff are required to evaluate all the information in the patient's clinical records.

Our response

Patient records need to be easily searchable, accessible and understandable.

Medtex is a semantic medical text analysis software based on natural language processing (NLP) and machine learning that turns medical narrative into structured data that can be easily stored, queried or rendered by most systems for use in their health application.

Medtex has been developed in partnership with healthcare practitioners from cancer registries, and hospital radiology and emergency medicine departments.

Working with health industry stakeholders allows Medtex to provide informed decision support by extracting greater value from their clinical narrative reports.

It standardises free text by identifying medical concepts, abbreviations and acronyms, shorthand terms, dimensions and relevant legacy codes; and relates key medical concepts, terms and codes using contextual information and report substructure. It also uses formal semantics to reason with the clinical concepts, inferring complex clinical notions relevant to a health application.

Benefits

Medtex has a track record automating manual processes.

Medtex has delivered effective automated health monitoring and reporting solutions, including:

- the analysis of pathology and radiology reports as well as death certificates to assess the incidence of cancer and the associated mortality rates in a timely manner

- the analysis of pathology and radiology reports to support the reconciliation of test result findings with emergency department discharge records

- the analysis of medical reports to provide capability for medical record searching and analytics

- the analysis of medical forums to identify adverse drug reactions.

Medtex provides a simple way of easily and consistently using free-text clinical data to improve health outcomes for patients, ease the workload of clinical staff, boost the efficiency of the health system and provide a rich data set for further research.

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