

PhD project

Explainable detection and visualization of medical events in unstructured Danish electronic health record text using natural language processing

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Abstract

Medical records consist of structured and unstructured data. The structured data contains e.g. laboratory test results and patient demographics. The unstructured data can be notes and reports that record information in the form of free text. Medical doctors (MDs) must review relevant parts of the unstructured text to diagnose, monitor disease, or address treatment options. This is laborious as the text must be read through manually.

Prior bleeding and venous thromboembolism (VTE) are events that must be reviewed by MDs when patients are admitted. An algorithm that automatically detects and visualizes bleeding and VTE events in the EHR to the MD would have great value in clinical situations e.g. for reducing the time used to review the EHR and for automatic surveillance of symptoms

The aim of this PhD project is to detect bleeding and VTE in Danish EHR text and to present explainable decisions to the MD. Different approaches to make explainable and transparent classifications will be examined. Furthermore, it will be researched how the combination of deep learning and rule-based methods can combine to present explainable and high-accuracy decisions.