

CMPT 733 Big Data Science - Template for Capstone Project Idea

Medical Language Understanding

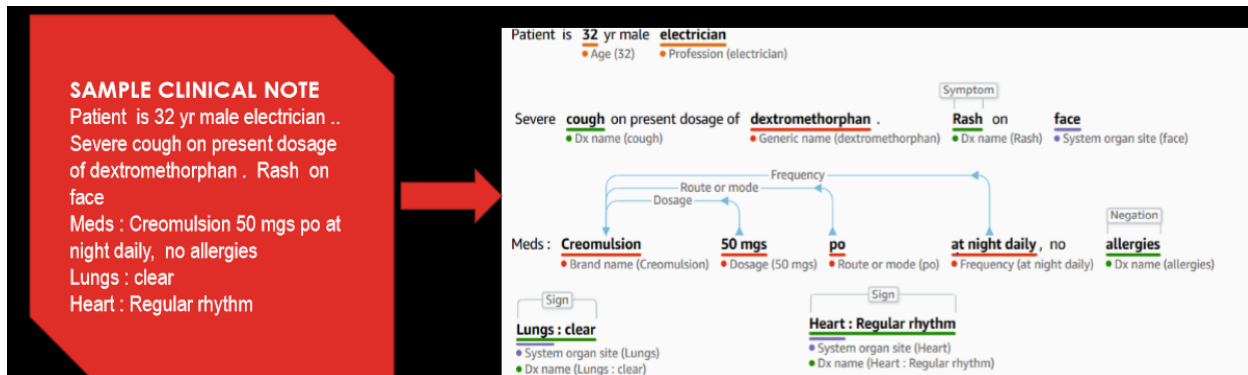
Description

Providence Healthcare manages hospitals and clinics across BC (approx. \$1B in annual operating revenue) and is looking for ways to tap into large amount of clinical notes and charts in order to improve patient care.

NLP helps convert unstructured text into structured data by identifying concepts such as - medication, condition, procedures, anatomy as well as the relationship between them

Using the latest NLP techniques, ideal outcome from this project is to build a demo app that can:

1. extract relevant medical entities
2. allow semantic search for patients based on medical terms
3. Individual Patients Medical Record Screen with Extracted concepts
4. Display key medical concepts extracted from notes (medication, condition, anatomy, procedures)
5. Clicking on a concept shows occurrence of that or related concept in a longitudinal view as well as the original note itself.



Datasets

Real datasets are not possible to share with students without legal agreement given the sensitivity and privacy in healthcare records.

For the purpose of this proof of concept we will use an industry standard publicly available medical dataset such as MIMIC III. • MIMIC is an openly available dataset developed by the MIT Lab for Computational Physiology, comprising deidentified health data associated with ~60,000 intensive care unit admissions between 2001 and 2012. It includes demographics, vital signs, laboratory tests, medications, and more • The median length of an ICU stay is 2.1 days (Q1-Q3: 1.2-4.6) and the median length of a hospital stay is 6.9 days (Q1-Q3: 4.1-11.9) • A mean of 4579 charted observations ('chartevents') and 380 laboratory measurements ('labevents') are available for each hospital admission.

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