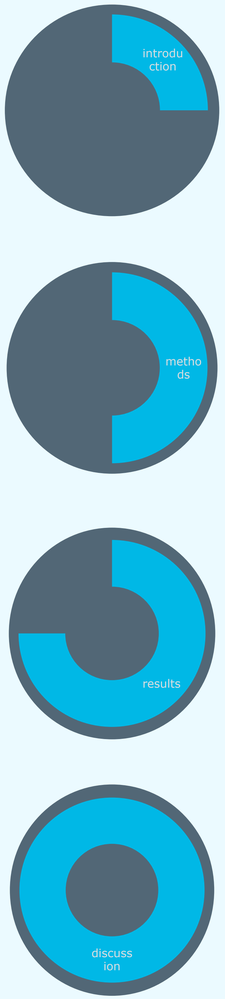
Taking advantage of ontologies to carry out searches of scientific bibliography in reliable information sources

Nicolás Passadore | HOPE

SNOMED CT Expo 2019
Kuala Lumpur | Oct 31-Nov 1

Click on a bubble to navigate the e-poster



Abstract

Using snomed-ct for the generation of suggestions of terms to use for the search of material hosted in the databases of reliable information sources on the Internet (eg PubMed), and the mapping of snomed-ct to other ontologies, decreases the Medical search times and allows the process of automation.

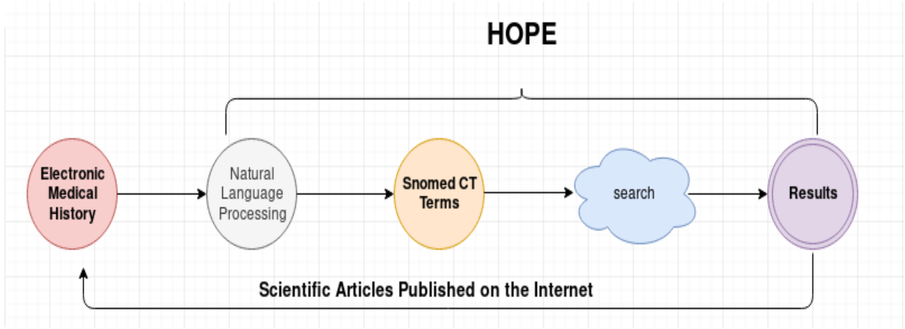
This search method that constitutes the hope project, provides the basis for evidence-based medicine in a personalized way.

Background

Take advantage of the power of expression of the concepts that make up SNOMED CT to link them with the terms expressed in an Electronic Medical Record and generate an automatic search fo r scientific literature published on the Internet
Providing information for the application of evidence-based medicine individually based on each clinical case.

Topic

- Integration with electronic clinical record
- Natural Language Processing
- Terms mapping to Snomed CT
- Scientific Articles Published on the Internet
- Automated and transparent search for the doctor
- Results integrated in the Electronic Medical History
- Web Ontology Language



Taking advantage of ontologies to carry out searches of scientific bibliography in reliable information sources

Nicolás Passadore | HOPE

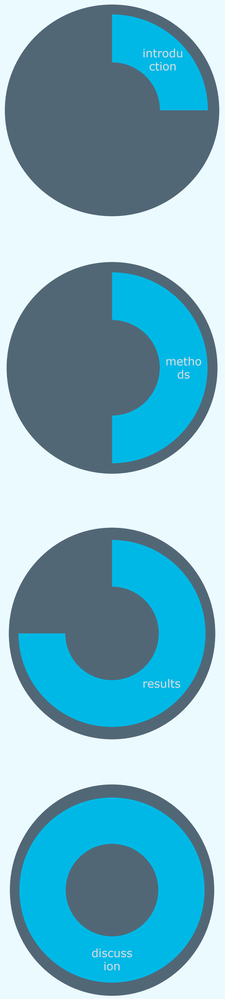
SNOMED CT Expo 2019
Kuala Lumpur | Oct 31-Nov 1

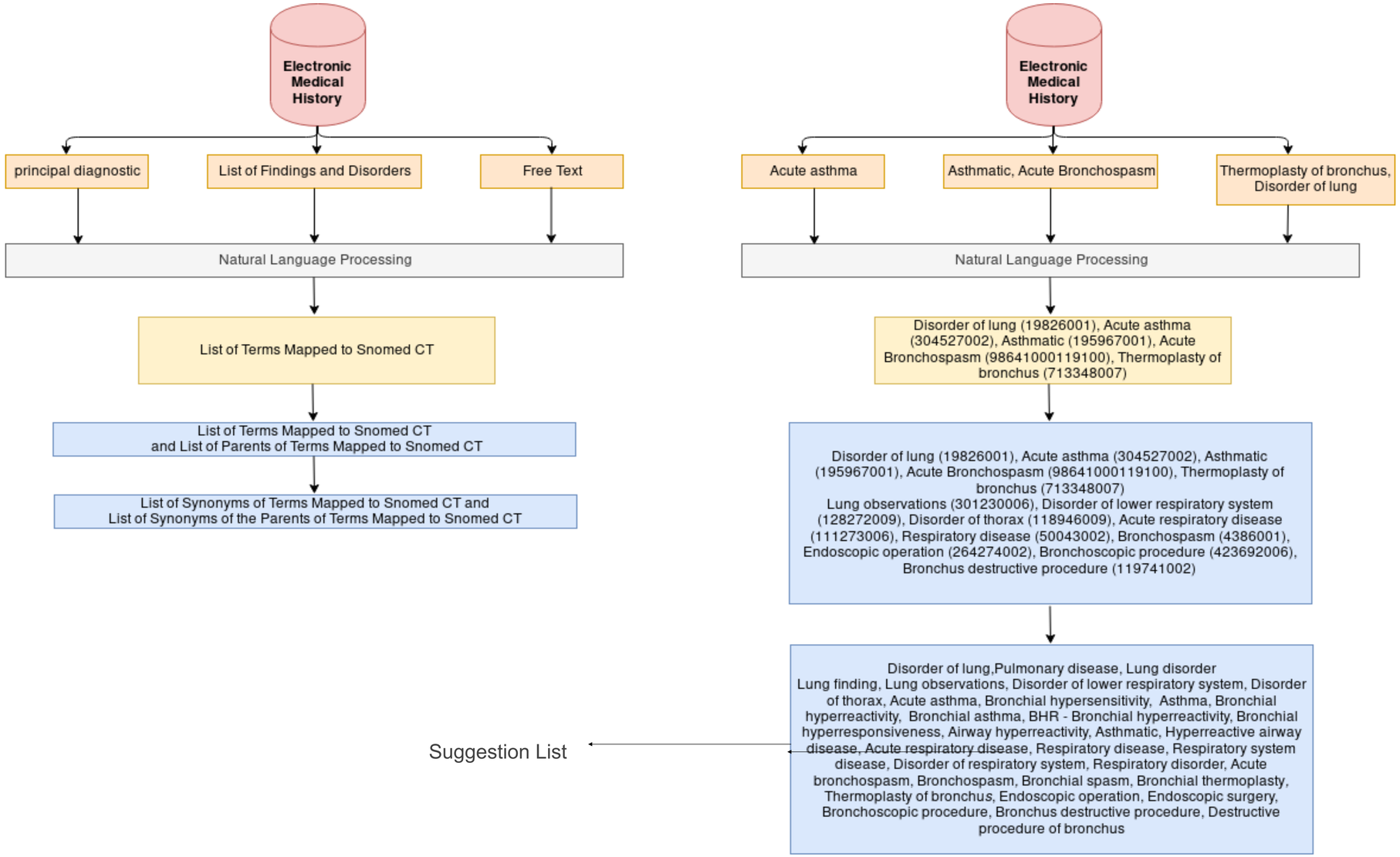
tpp

METHOD

END SHOW | TITLE SLIDE

Click on a bubble to navigate the e-poster





Taking advantage of ontologies to carry out searches of scientific bibliography in reliable information sources

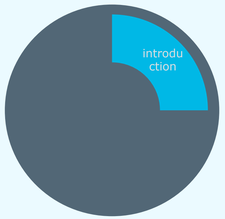
Nicolás Passadore | HOPE

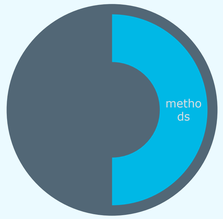
SNOMED CT Expo 2019
Kuala Lumpur | Oct 31-Nov 1

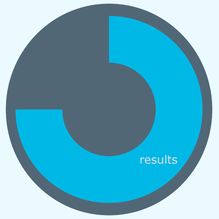
RESULTS

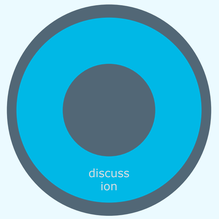
END SHOW | TITLE SLIDE

Click on a bubble to navigate the e-poster









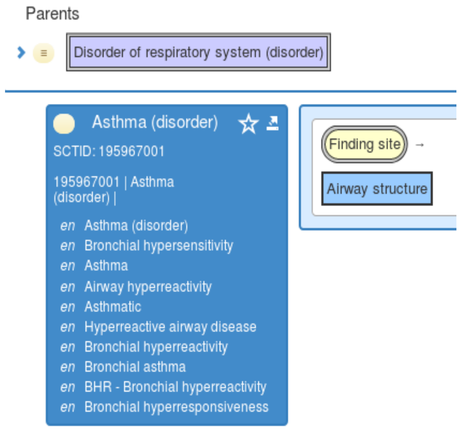
First instance

Doctor interprets and describes the clinical case of the patient in the electronic clinical record. Then request recommendations of scientific articles from reliable bibliographic information sources, (eg PubMed, clinicaltrials)

Second instance

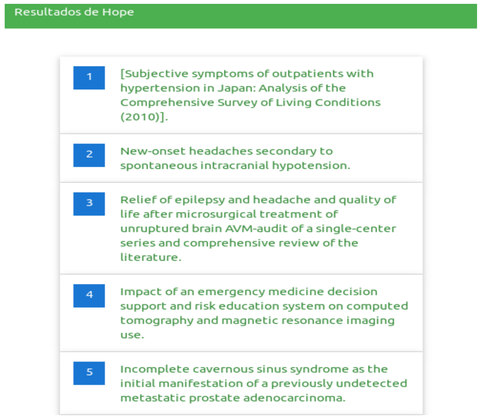
Natural language processing on the notes made by the doctor

Third instance



Terms mapping to snomed ct and search for synonyms

Fourth instance



Recommendations of scientific articles

Taking advantage of ontologies to carry out searches of scientific bibliography in reliable information sources

Nicolás Passadore | HOPE

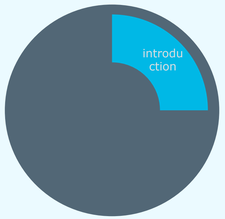
SNOMED CT Expo 2019
Kuala Lumpur | Oct 31-Nov 1

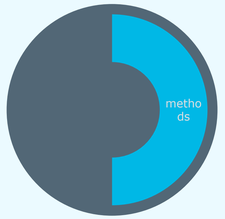
tpp

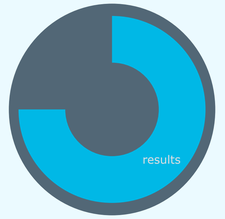
DISCUSSION

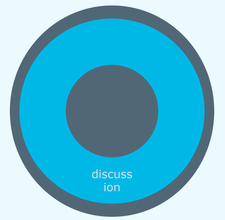
END SHOW | TITLE SLIDE

Click on a bubble to navigate the e-poster

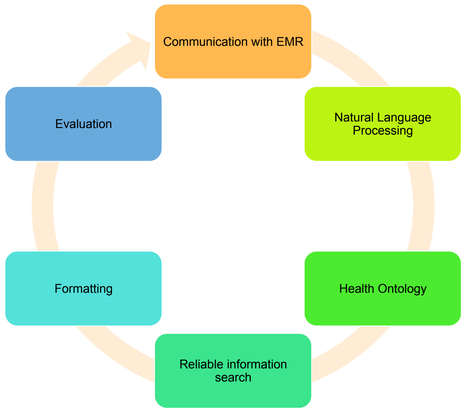








Analysis of results



Successful Practices

1. Natural Language Processing.
2. Greater mapping of terms to Snomed CT.
3. More terms that are then used as "suggestions" to form automatic searches.
4. Representation of the context in the search through the logical model of Snomed CT.

Future Directions

1. Method comparison with other tools.
2. Quality analysis of the results generated.
3. Tests in multiple medical specialties.

Conclusions

Snomed CT allowed to contemplate a wider range of clinical terms. All of the terms recovered from natural language processing have a correspondence with some concept of Snomed. The mapping and synonyms that arise from Snomed provide information that allows you to generate an advanced search on the sources of information. In this way it was possible to improve the automated search on public bibliographic information sources, such as pubMed, Medlinepluis, clinicalTrials, etc. Creating with this method a system for evidence-based medicine that leverages resources on the web, in a personalized way based on the patient's clinical data entered in the electronic clinical file.

References

1. Chacon KA. Desarrollo de una metodología piloto para vinculación a Clinical Trials como herramienta de medicina basada en evidencias, para proporcionar medicina centrada en el paciente. 2017. Disponible en: http://openaccess.uoc.edu/webapps/o2/bitstream/10609/66645/6/TFM_Karla_Azucena_Chacon_Vargas.pdf.
2. Sanchez Bocanegra CL. Healthrecsys: Sistema recomendador para la salud. 2018. Disponible en: https://idus.us.es/xmlui/bitstream/handle/11441/76323/HealthRecSys_Sistema%20recomendador%20en%20Salud_DEF.pdf?sequence=1&isAllowed=y.
3. Passadore N. Recomendaciones de Artículos a través de PUBMED. 2017. Disponible en: http://openaccess.uoc.edu/webapps/o2/bitstream/10609/66786/6/npassadoreTFM0617memoria.pdf
4. Garbade MJ. A Simple Introduction to Natural Language Processing. 2018. Disponible en: https://becominghuman.ai/a-simple-introduction-to-natural-language-processing-ea66a1747b32.
5. Snomed International. 5-Step Briefing. Enero 2017 [2017 Enero 15]. Disponible en: http://www.snomed.org/snomed-ct/what-is-snomed-ct.
6. Lu Z, Wilbur WJ, McEntyre J [et ál]. Finding Query Suggestions for PubMed. AMIA Annu Symp Proc. 2009. 2009: 396–400. Disponible en: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2815412/.