TEAM READGOOD

Luke, Lucky, Joe, Akansh AI Genomics hackathon June 25, 2017 San Francisco, CA 66

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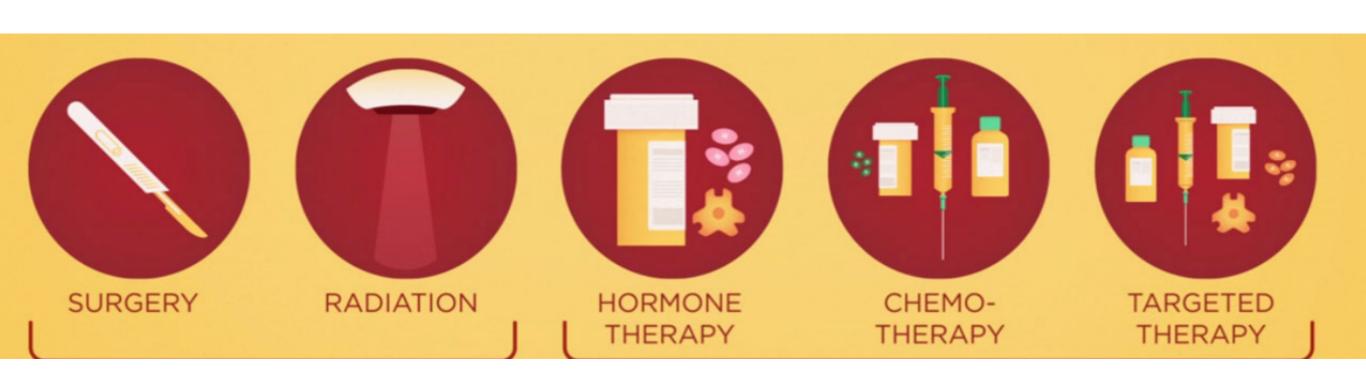
INTRODUCTION

➤ We mined the Internet (academic sources and general news) to find as many papers with treatment options as possible for neurofibromatosis 2 (NF2).

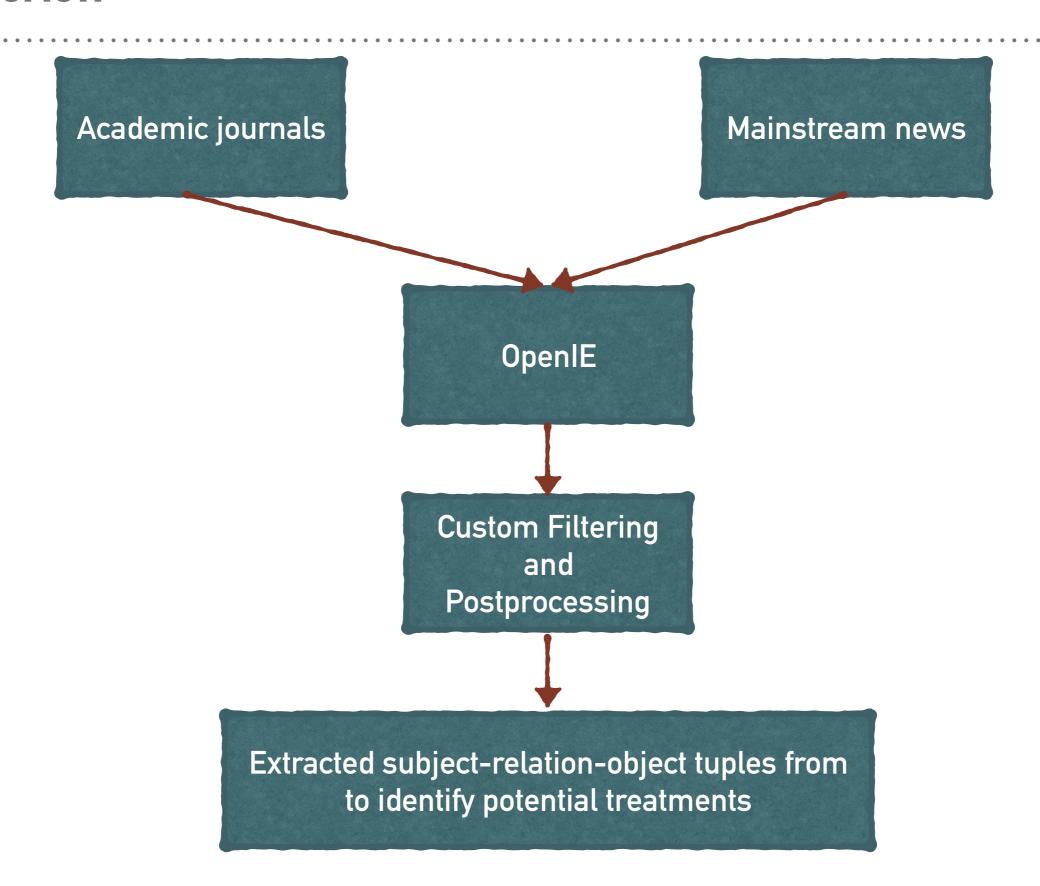


PURPOSE

- ➤ The purpose is to provide NF2 patients like Onno with a wide variety of treatment options.
- ➤ Specifically, we are looking for treatment options that could potentially help slow or stop tumor growth rather than just deal with the side effects of NF2.



APPROACH



METHODS/ALGORITHMS/MODELS

- ➤ Data sourcing (IrisAI, EDirectCookbook, web crawling w/ Google).
- ➤ Data cleansing/transformation (conversion to plain text).
- ➤ Application of OpenIE algorithms, which extract relation triples (subject-relation-object of relation), with additional file pipeline, filtering, and file writing modifications.
- ➤ Topic modeling using Gensym and Latent Dirichlet Allocation. "Bevacizumab response schwannomas vestibular treatment neurofibromatosis tumor hearing patient."
- > Selection of top candidates: human filters.

http://bit.ly/ReadGood_results

| 251 lines (250 sloc) 23.1 KB | | | | istory 📮 🧨 🛅 |
|--------------------------------|---------------------------|----------------------|--|---------------------------|
| Q Schwanno | | | | |
| 1 | Subject | Relation | Object | Evidence |
| 2 | Human schwannoma | treat with Ponatinib | decreases viability of merlin-deficient HSC and vestibular schwannoma (VS) cells | https://www.ncbi.nlm.nih. |
| 11 | human schwannoma cell | treat with | src inhibitor su6656 | 28427224.txt |
| 12 | schwannoma cell | treat with | src inhibitor su6656 | 28427224.txt |
| 26 | vegf antibody bevacizumab | shrink | schwannoma | 28620005.txt |
| 32 | akt dephosphorylation | decrease | schwannoma cell proliferation | 324af9b1b846484b990c |
| 33 | akt dephosphorylation | decrease | schwannoma growth | 324af9b1b846484b990c |

RESULTS

Searchable database of conditions, treatments, results, and evidence

FUTURE CONSIDERATIONS

- ➤ Human-in-the-loop verification of results
- ➤ Weighting triples by citation or some other factor
- More robust filtering
- Wider data sourcing
- ➤ More clinically-oriented NLP engine (Nuance CLU) that allows for better entity recognition, POS-tagging, etc.
- ➤ Individual tailoring of treatments, side effects, etc...

WeReadGoodPapers@googlegroups.com

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