Kobby Panford-Quainoo

Research Interest: Graph Neural Network
Representation Learning in Healthcare

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Motivating directions

- Answering the “what if?” questions
  - Randomized control trials are expensive in healthcare
- Leveraging medical knowledge in structured prediction
- Personalized Patient decision-making

Answering the “What if?” questions

- Medical literature and knowledge sources for causal graphs
  - Extracting semantic relations from these sources eg. PubMed

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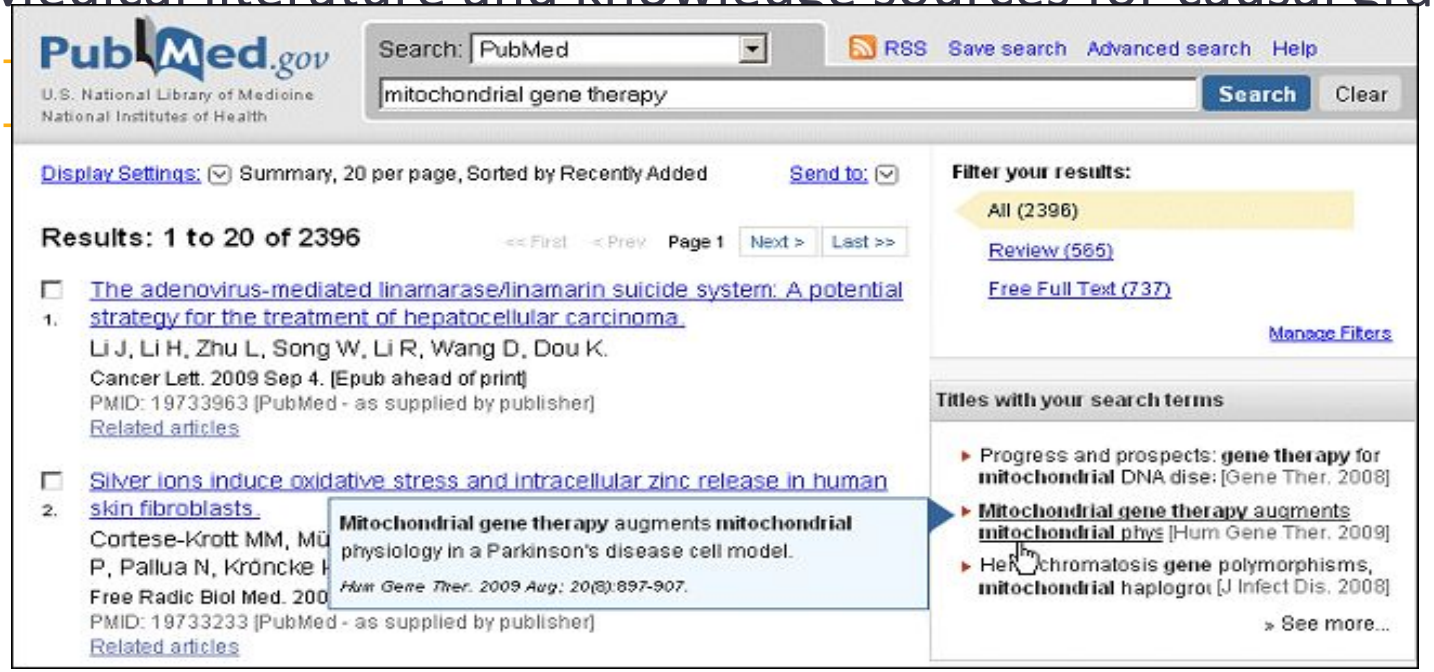
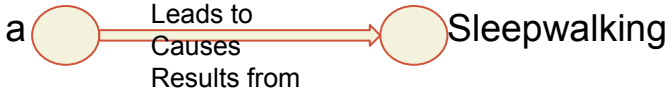


Answering the “What if?” questions

- Medical literature and knowledge sources for causal graphs
  - Extracting semantic relations from these sources
  - *Disease a* **causes** *sleepwalking*



Answering the “What if?” questions

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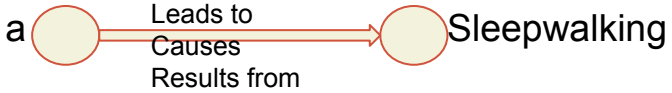
  - *“Disease a* **causes** *sleepwalking”*

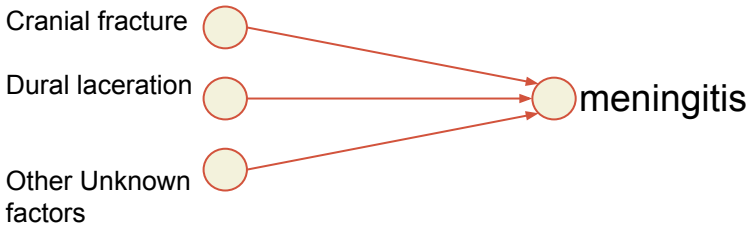


❑ “Can disease a cause sleepwalking?”

Answering the “What if?” questions

- Medical literature and knowledge sources for causal graphs
  - Extracting semantic relations from these sources
  - *“Disease a* **causes** *sleepwalking”*

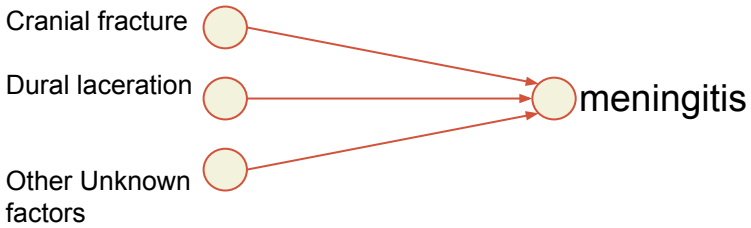
- “Can *disease a* **cause** *sleepwalking*?”
- “*Cranial fracture with dural laceration* **leads to** *meningitis*”



Answering the “What if?” questions

- Medical literature and knowledge sources for causal graphs
  - Extracting semantic relations from these sources
  - *“Disease a* **causes** *sleepwalking”*

- ❑ “Can *disease a* **cause** *sleepwalking*?” → ❑ **NLU problem**
- ❑ “*Cranial fracture with dural laceration* **leads to** *meningitis*” → ❑ **Validity of coexisting diseases + Causal edge**



Medical Knowledge in models

- Encode medical knowledge for structured predictions
  - Eg. ICD-9, ATC, SNOMED CT etc.

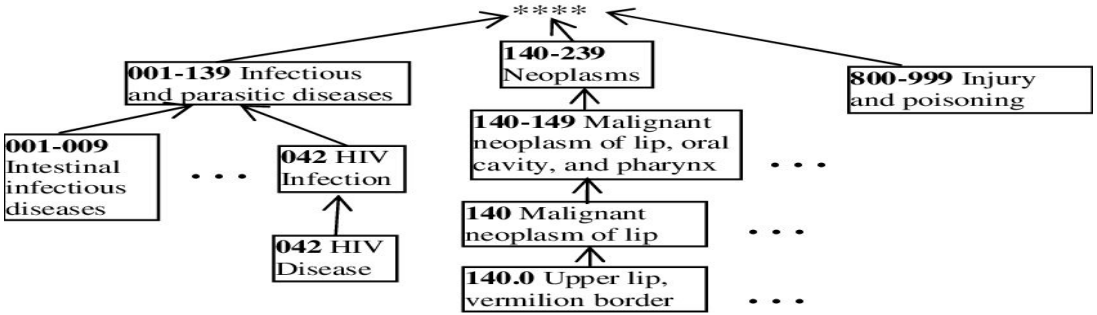


Fig by T.M Truta

- Using Graph-based approaches

Thank You