Conclusion

Tutorial Summary
Introduction to Open-domain Question Answering

- Problem definition, motivation, applications

- Brief historical review
  - One of the earliest AI challenges
  - TREC QA tracks
  - IBM Watson Deep QA
  - Machine reading comprehension

Tutorial Summary
Latest development on QA

- Popular datasets for training and evaluating open-domain QA
- Retriever + Reader
  - DrQA - Chen et al. 2017. *Reading Wikipedia to Answer Open-domain Questions.*
- Dense retriever and end-to-end training
  - ORQA - Lee et al. 2019. *Latent Retrieval for Weakly Supervised Open Domain Question Answering.*
- Retrieval-free
  - T5 - Roberts et al. 2020. *How Much Knowledge Can You Pack Into the Parameters of a Language Model?*

Tutorial Summary
Open-domain QA using KBs and text

- Introduction to open-domain QA using KBs
  - Properties of entity-centric knowledge bases
  - Pros and cons of using KBs for open-domain QA

- Recent work on using both text and KBs
  - Constructing graphs of heterogeneous nodes & edges
    - Sun & Dhingra et al. 2018. *Open Domain Question Answering Using Early Fusion of Knowledge Bases and Text.*
  - Leverage graphs for passage retrieval
    - Min et al. 2020. *Knowledge Guided Text Retrieval and Reading for Open Domain Question Answering.*

Open problems and future directions

- <u>Hot topic</u>: the two open-domain QA paradigms:
  Explicit context retrieval vs. knowledge encoded in models
  - Pros/Cons & Trade-off
  - Impact of large pre-trained models
  - Efficiency & accuracy

- Complete user experience
  - Rationale and evidence to support answers
  - Answer triggering: knowing when it doesn't know

- User interaction and grounding
  - Multi-turn, conversational QA
  - Multi-modal interactions (e.g., VQA, virtual tour guide)

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