# Grimjack at Touché 2022 Advanced IR, Winter Semester 2021/22

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#### Task at hand

- ► Task 2 of Touché: Argument Retrieval
- Argument Retrieval for Comparative Questions
- ► Task: Retrieve relevant passages to answer comparative questions and detect their stance w.r.t the objects
- Data: > 1 million text passages

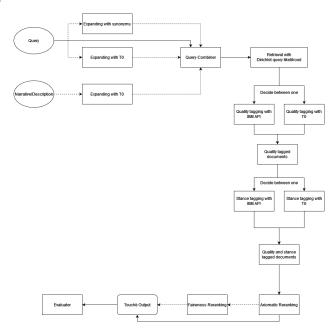


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## General approach

- Programmed in Python
  - Easy to use
  - ► High readability
  - ► Many IR libabries available
- ► Three modules: Search, Run file and Evaluate
- Pipeline consists of
  - Query-Expander and Query-Combiner
  - Initial Retrieval
  - Argument quality and stance tagging
  - Reranking
- Indexing and initial retrieval via pyserini [Lin+21]

# Pipeline



## Query-Expander and Query-Combiner

- Expanding queries with synonyms of comparative objects
- ► Two Different approaches
  - Based on embeddings with glove
  - Based on language model T0 [San+21]
  - ► We ask "What are synonyms of the word <token>?"
- With T0 also new queries from narrative and description
- ▶ We ask "<text> Extract a natural search query from this description."
- Combining all new queries with OR
- Retrieving ranked list of passages with this new query

### Argument quality tagging

- Extracting arguments with TARGER [Che+19]
- For each argument we want to know the quality w.r.t. the topic
- Two different approaches
  - ► Based IBM Debater API [Tol+19]
  - Based on T0
  - We ask "<sentence> How would you rate the readability and consistency in this sentence? very good, good, bad, very bad"
- ▶ IBM API returns a score between 0 and 1
- 0 means lowest quality and 1 highest quality

### Example

Arg: Cars should only provide assisted driving, not complete autonomy Topic: We should further explore the development of autonomous vehicles Score: 0.7256

### Argument stance tagging

- Next we want to know the stance w.r.t. the topic
- ► Two different approaches
  - Based on IBM Debater API [Bar+17]
  - ► Based on T0
  - We ask "<sentence> Is this sentence pro/against <comparative\_object>? yes or no"
- It is also possible to expand with sentiments
- Both approaches only work for single target stance
- Calculating the multi target stance
  - Calculate the difference between objects
  - Use a threshold
  - Convert T0s output into a numerical representation

# Reranking

► Foo

### Final Remarks

- ► Approach is very flexible
- We investigate influence of components w.r.t the retrieval score
- Stance classification may be better with Roberta approach
- ► We cannot distinguish between neutral and no stance
- ▶ We investigate how reranking influences the retrieval score
- ► T0 solves a lot of IR tasks
- ► Is it possible to only use T0 for retrieval?

Thank you!

### References

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