Argument Mining for Argumentation-Based Decision Making

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ABSTRACT

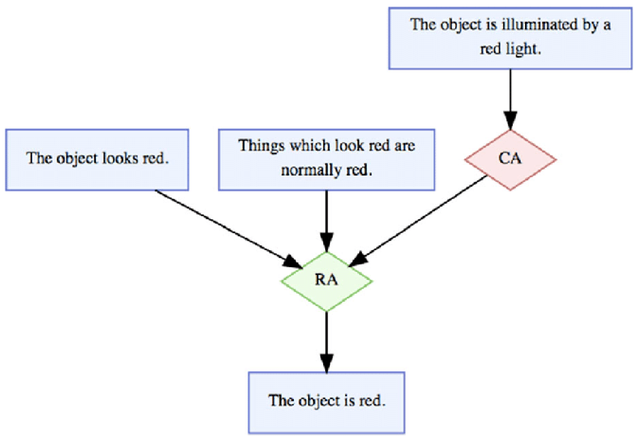
Argument mining is a subfield of NLP focused on the extraction of argumentative content from unstructured text. The project consists of two parts:

1. Extract structured arguments from web sources (e.g., Twitter, Reddit or review sites)
2. Provide a dialogue system to query and understand arguments

This will entail constructing theoretical extensions to computational argumentation as well as advancing neural argument mining methods.

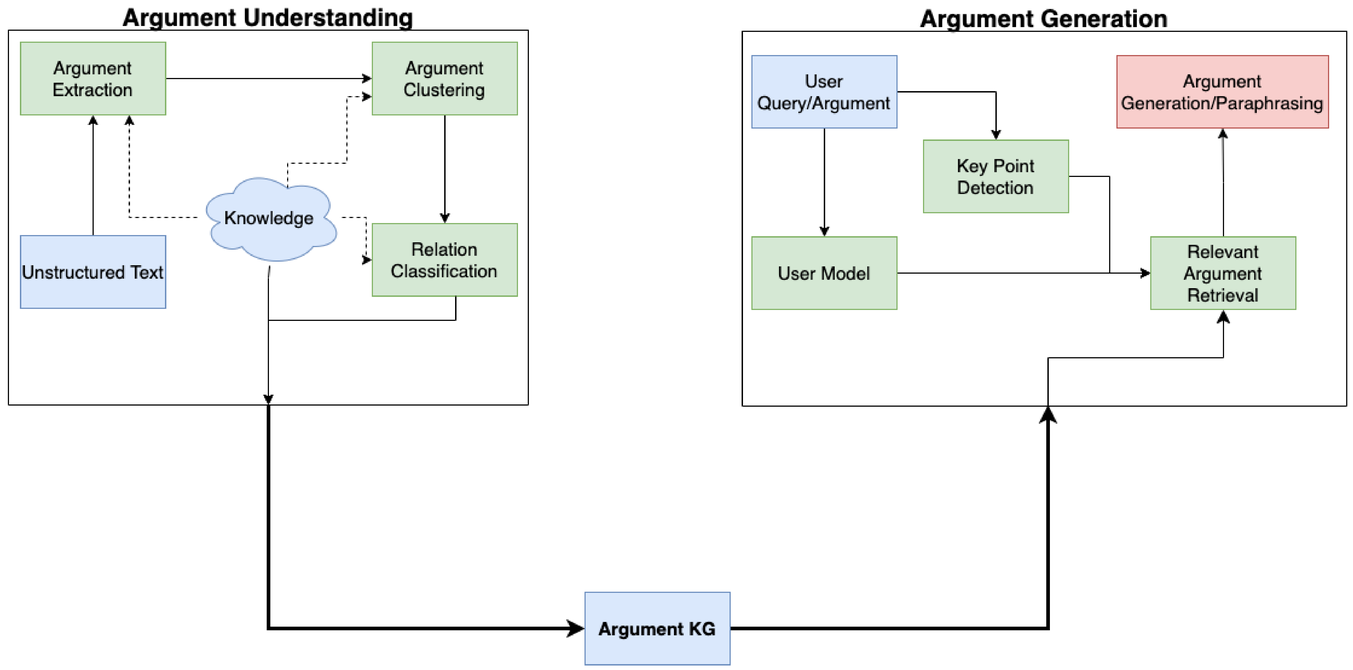
COMPUTATIONAL ARGUMENTATION

Computational argumentation is the formal study of argument structures and argument validity [1].



MOTIVATION

- The web contains a large variety of arguments with a wide variety of stances on different topics
- New insights can be gained by collecting these arguments and identifying their relationships
- Cross-web argument mining might lead to very large sets of arguments
- A dialogue system could help users query the mined arguments to find information relevant to them



DIALOGUE SYSTEMS

Human-agent dialogue can be modelled as a game in which players take turns making conversational actions (counterattacking, providing evidence, asking for elaboration etc.) to achieve some goal. The choice of action is often non-trivial. For example, choosing the best counterattacking argument at each step may lead to the conversation taking tangents which do not get the agent closer to their goals. Reinforcement learning is often used to identify the best move to make in order to learn successful and natural policies for the dialogue game [2].

MILESTONES

1. Make a significant improvement to SOTA relational mining systems
2. Construct argument graphs mined from Web corpora
3. Construct a rudimentary dialogue system to provide arguments together with personalized explanations

APPLICATION AREAS

- Review aggregation [3]
- Opinion mining with justifications
- Recommender systems [4]
- Healthcare

REFERENCES

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