

ConvoSense: Overcoming Monotonous Commonsense Inferences for Conversational AI



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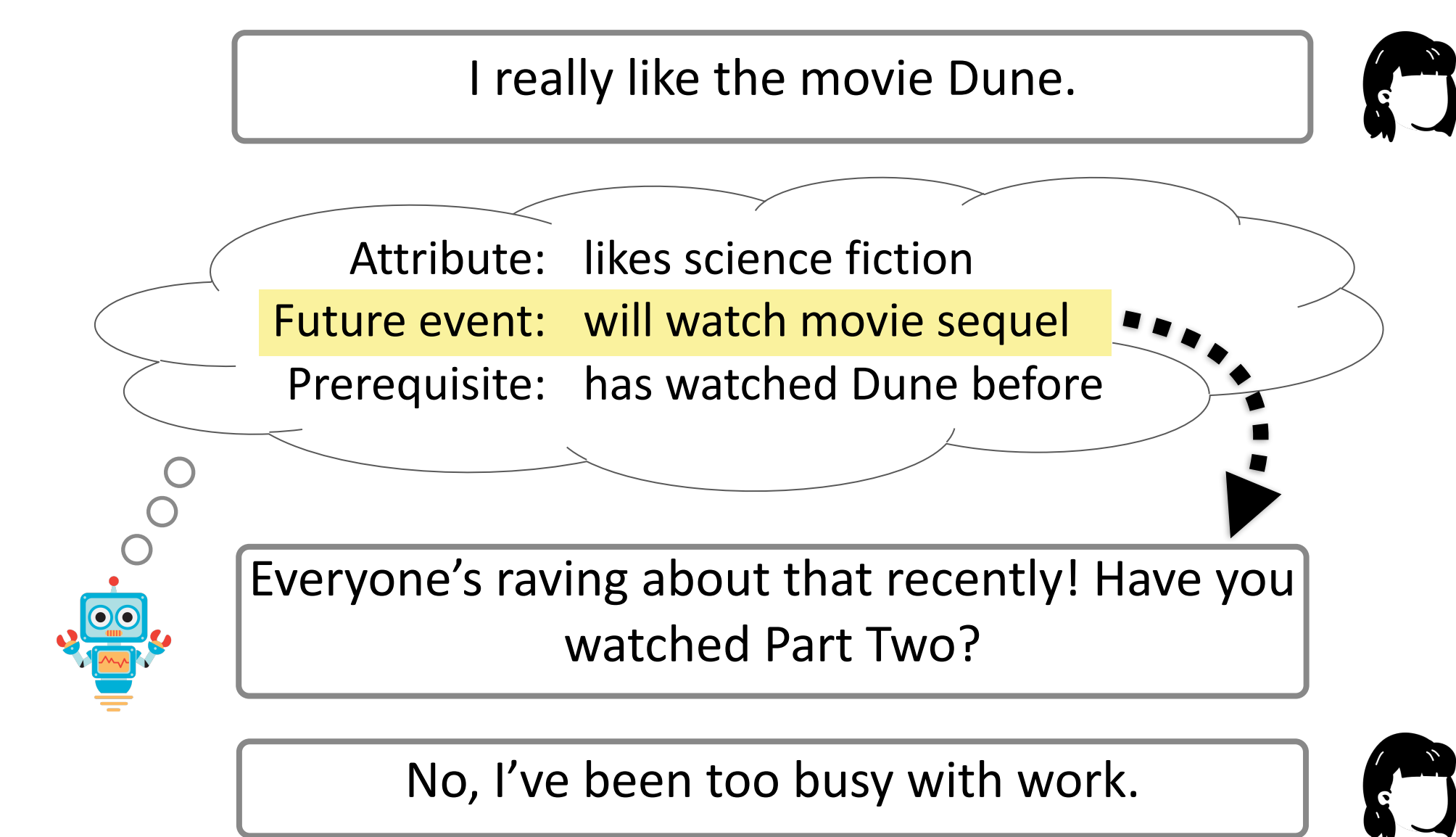
Commonsense for Dialogue

Task Formulation

- Given a dialogue context and a commonsense type, output an inference that is relevant to the dialogue context and is of the specified type

Motivation

- Commonsense knowledge can improve understanding of content shared by human users in dialogue
- Deeper understanding is useful for response generation, dialogue summarization, and more



Existing Dialogue Commonsense Resources

ComFact

Humans map ATOMIC commonsense tuples to dialogue turns
Total: 5K
Avg: 350 per 15 types

Cicero

Humans write answers to commonsense questions
Total: 71K
Avg: 14K per 5 types

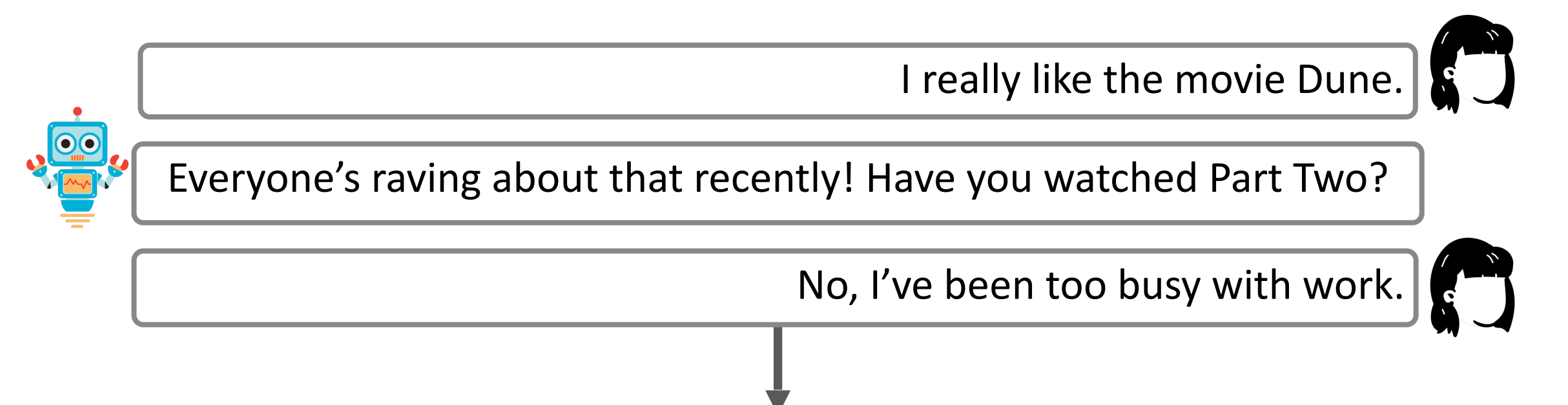
Reflect

Humans write answers to commonsense questions
Total: 3K
Avg: 600 per 5 types

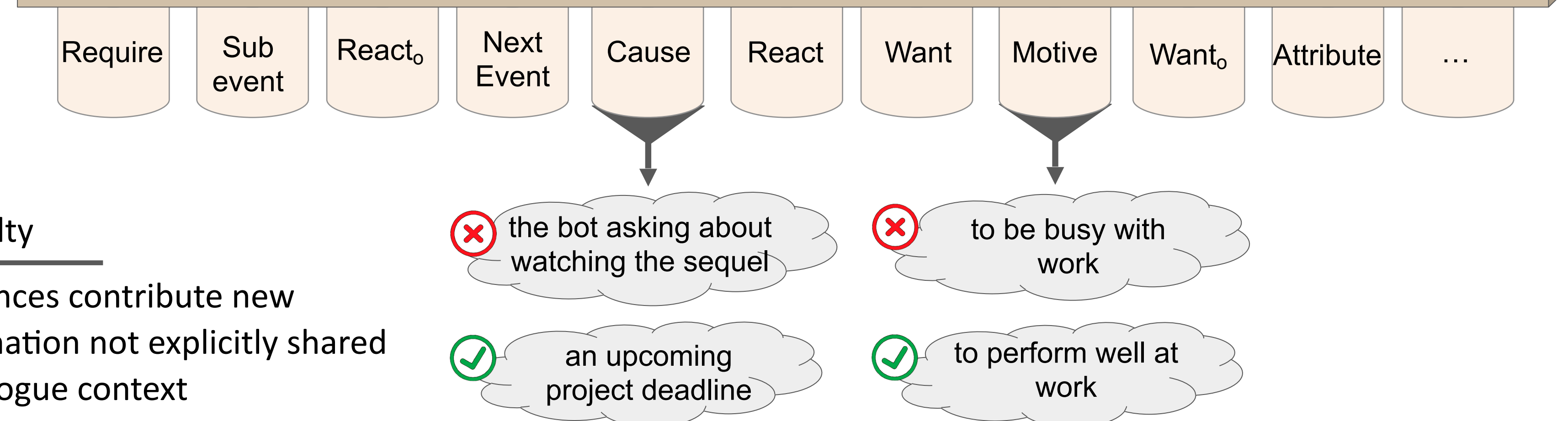
Improvement Objectives:

1. Diversity

- Cover many commonsense types
- Output multiple inferences for a single example

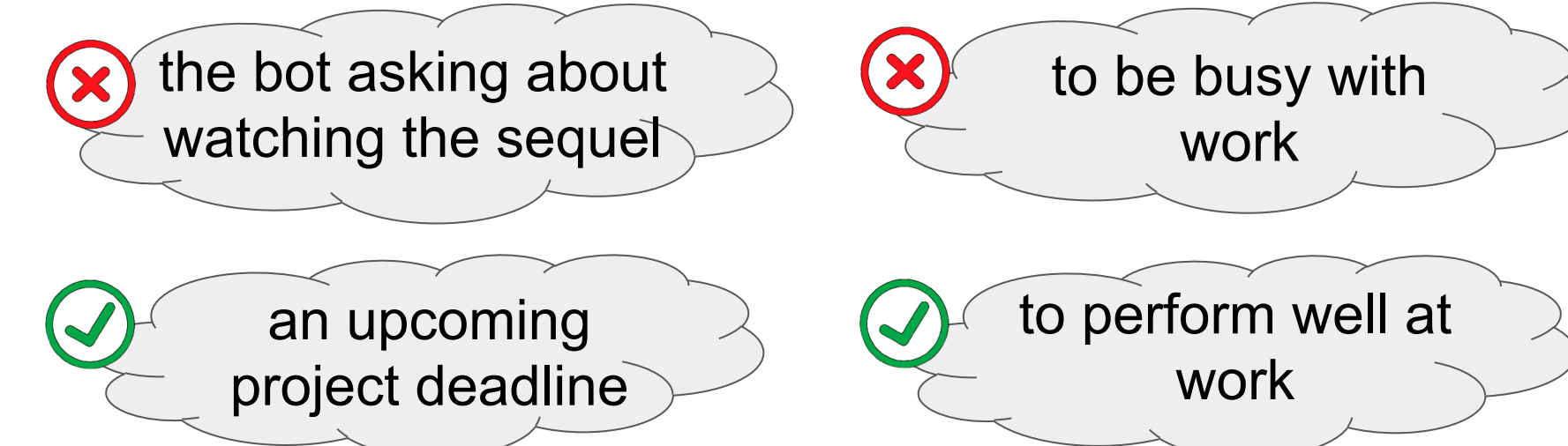


Social Commonsense



2. Novelty

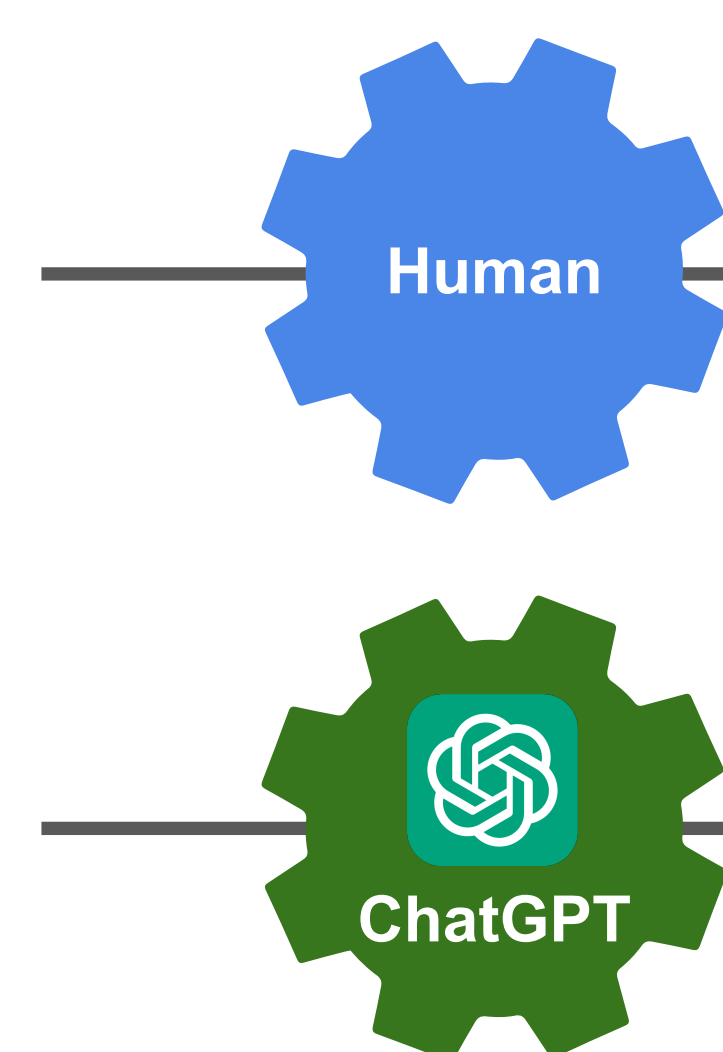
- Inferences contribute new information not explicitly shared in dialogue context



Leveraging LLMs for Commonsense

Listener: I can't decide whether to go to university or get a job What's your opinion?
Speaker: Well, if I were you, I would go on studying.
Listener: But I don't event know what to study.
Speaker: I advise you to major in economics.
Target: I advise you to major in economics.
Question: What could have caused the last thing said to happen?
Answer: This was caused by...

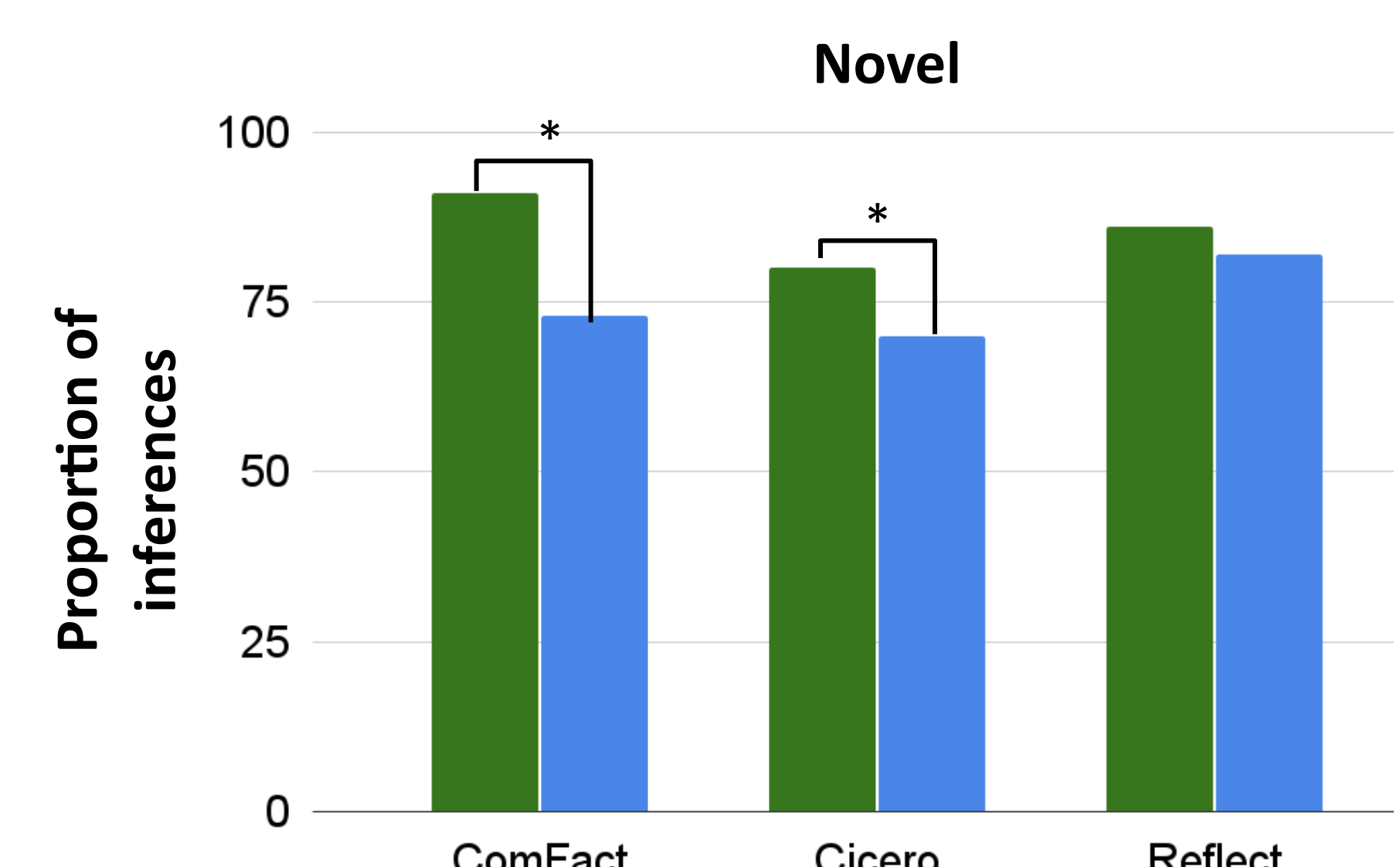
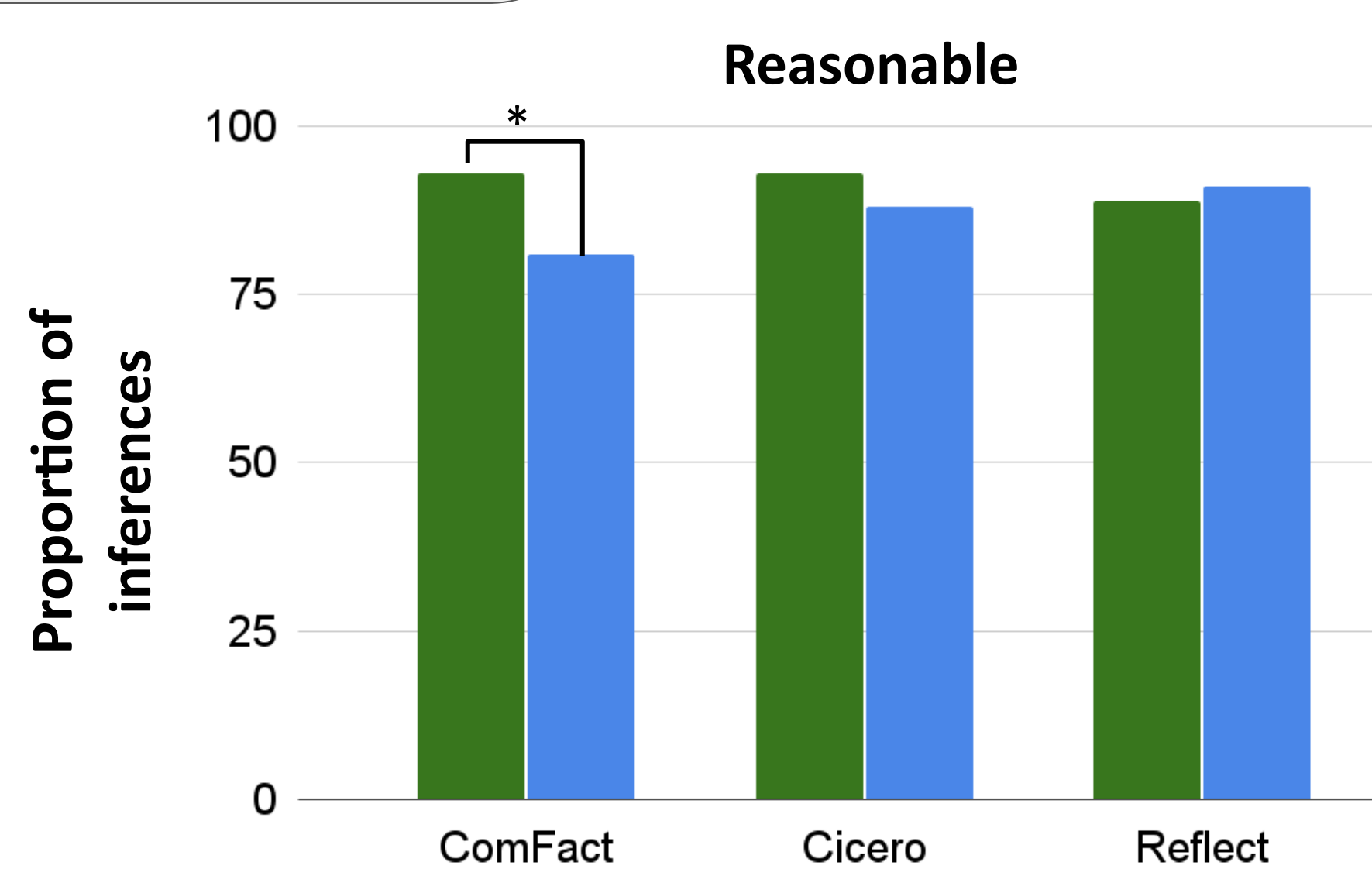
In a list titled "Answers", generate several likely answers to this question for the target expression, keeping the rest of the conversation in mind.
 Your answers should provide novel information that is not explicitly shared in the conversation.



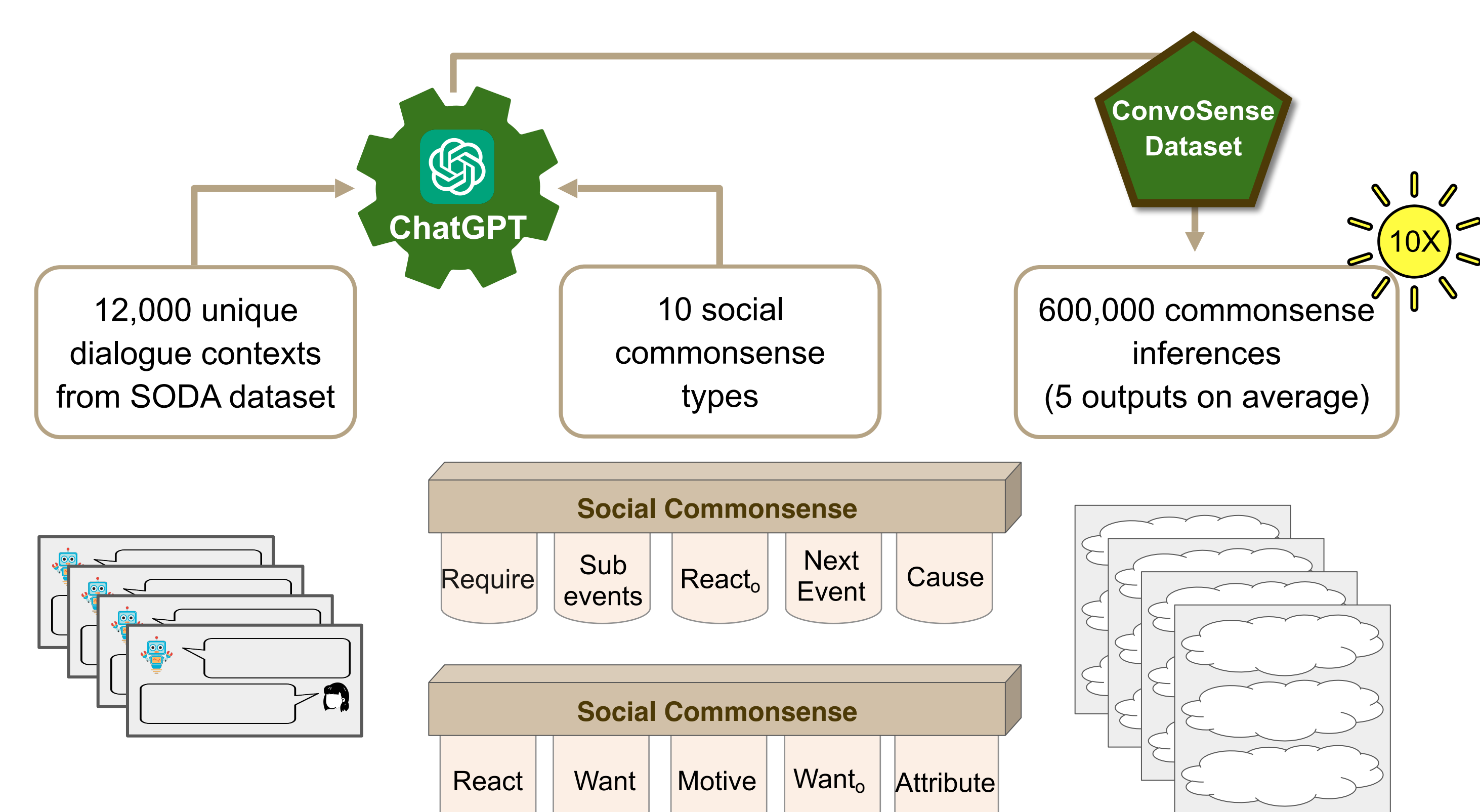
1. The listener does not know which subject to study.

- The speaker's personal interest in economics.
- The speaker's observation of the job market and the high demand for economics graduates.
- The speaker's perception of economics as a versatile and valuable degree that can open up various career paths.
- The speaker's inclination towards quantitative and analytical subjects, which are central to economics.

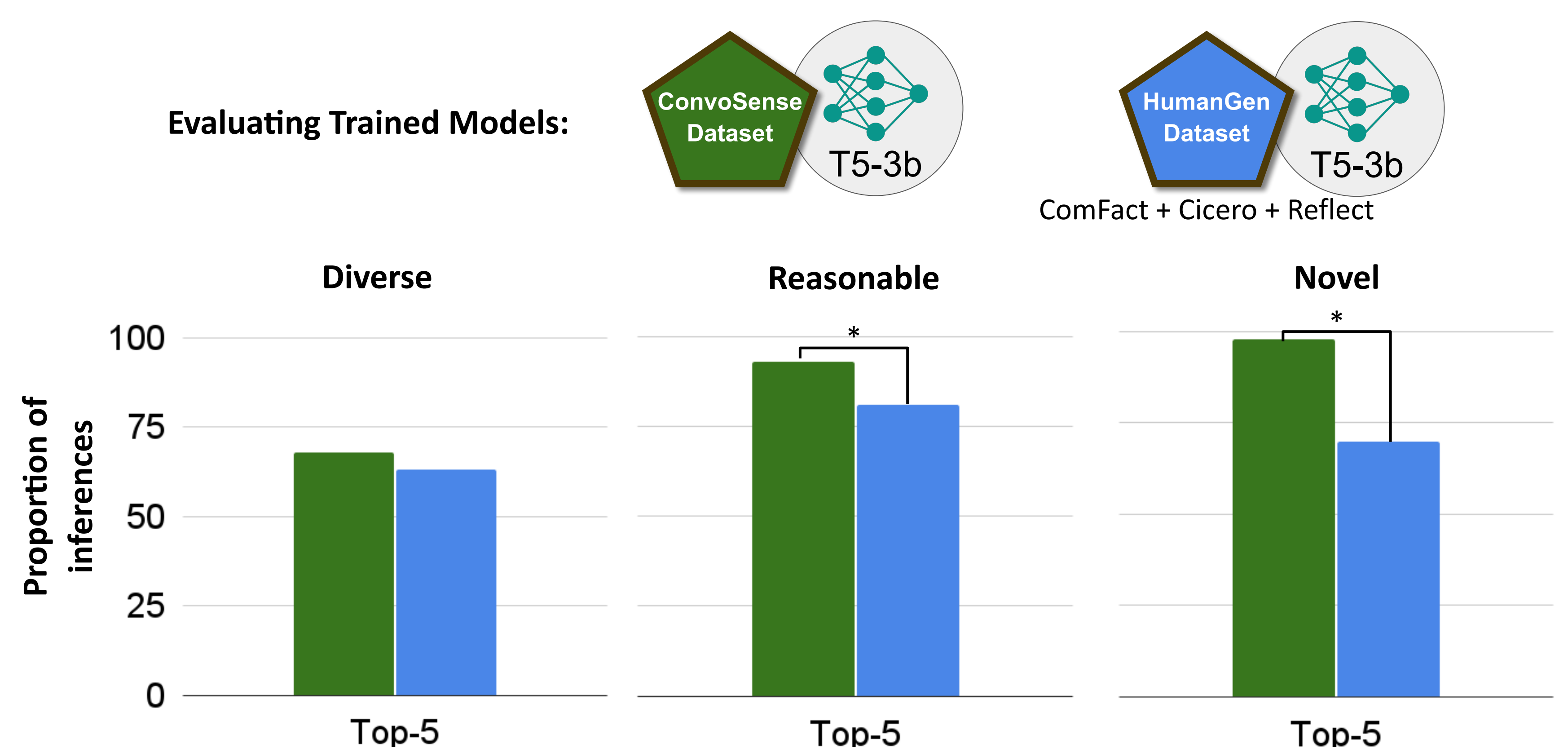
Evaluation of LLM-generated commonsense inferences against human-written



Distilling Commonsense for Practical Generation



Evaluating Trained Models:



Acknowledgements: