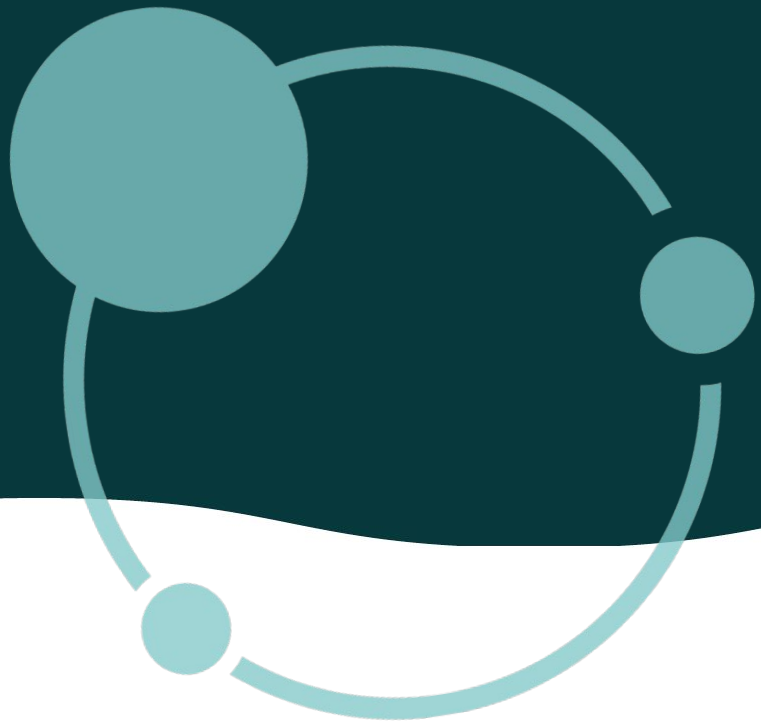
Powering Effective Climate Communication with a Climate Knowledge Base



Kameron Rodrigues, Shweta Khushu, Mukut Mukherjee, Andrew Banister, Anthony Hevia, Sampath Duddu, Nikita Bhutani

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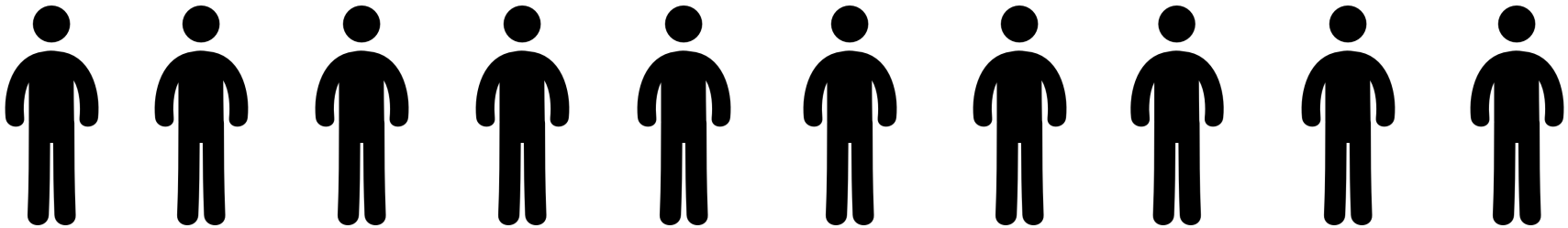
How many Americans think global warming is happening?



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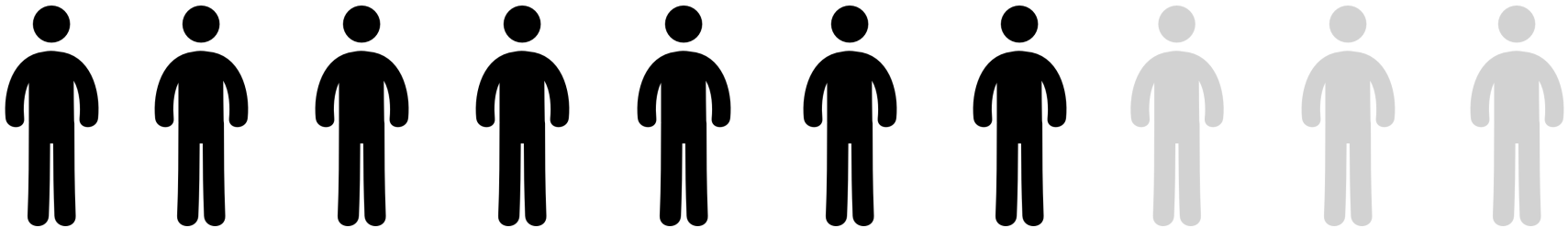
Yale Public Opinion Polling 2020

Americans that think global warming is happening



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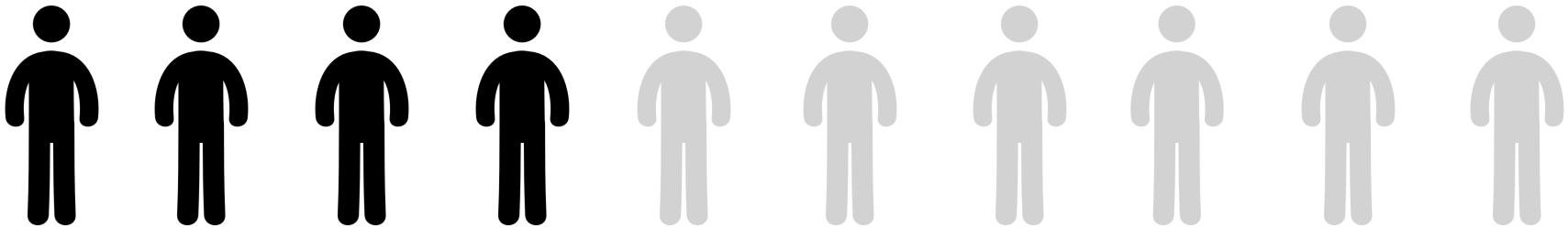
... think it will harm them personally



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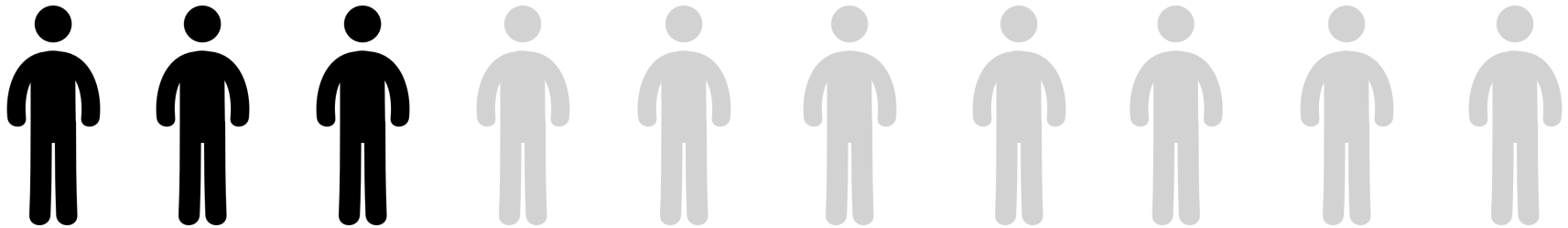
... discuss it at least occasionally



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Talking about climate change is essential

If we don’t talk about climate change, why would we care about it?
And if we don’t care, why would we act?

Talking about climate change is essential

If we don’t talk about climate change, why would we care about it?
And if we don’t care, why would we act?

Effective communication is necessary to inspire action.

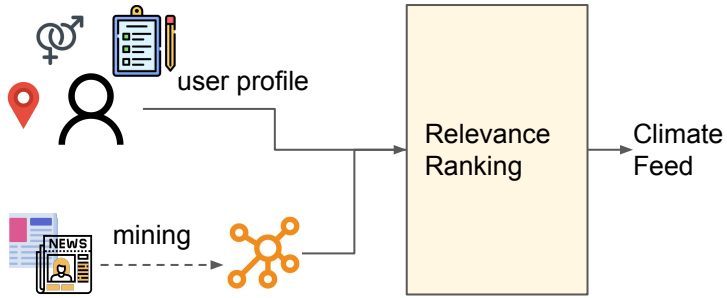
Empowering Effective Climate Communication

1. A climate knowledge base (ClimateKB) that contains causes and effects of climate change

2. A knowledge discovery pipeline that reads reputable news articles and populates ClimateKB semi-automatically

3. A recommendation system informed by personal values and powered by ClimateKB concepts

Climate Mind



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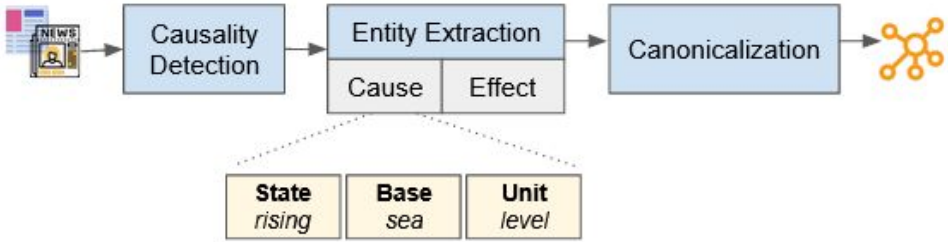
System Overview

1. Data Collection
   - Built ClimateKB from **news articles**
     - Manually aggregated popular, reputable and relevant articles
     - **~800 climate articles**

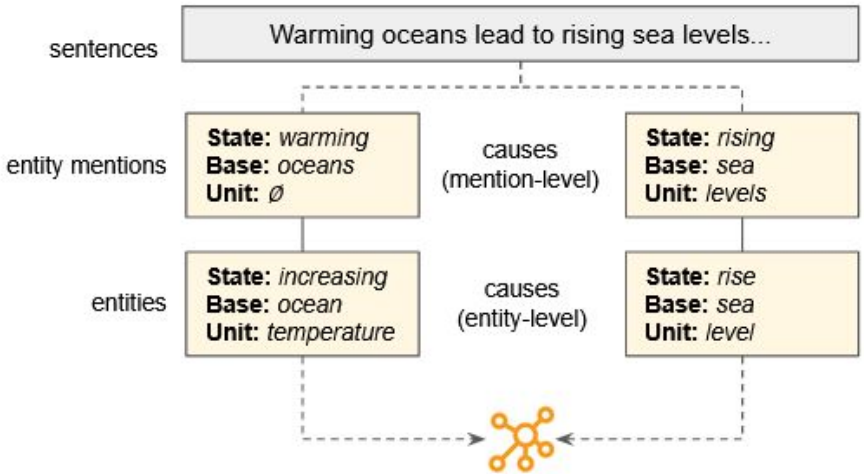


2. Causality Detection
   - **pre-trained BERT** using unstructured climate text
   - **fine-tuned ClimateBERT** with SemEval2007 and SemEval2010 datasets to detect causal relationships
   - **Identified causal sentences** in news articles using ClimateBERT

System Overview cont...

3 Extract Information from cause-effect sentences
- **extract** base *entity mentions* & the *causal relationship* between *entities*

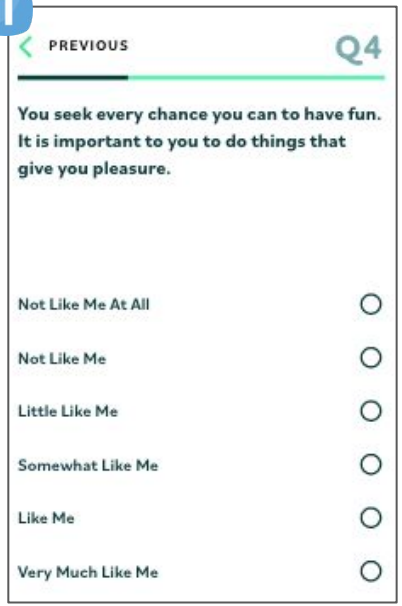
4 Canonicalization
- The extracted information is then processed into a *standard form* that can be **inserted** into ClimateKB
- **Human evaluation** is used to ensure the quality of the information inserted



Recommendation System

Our current recommendation system works by:

1



Identifying a user's personal values via a questionnaire (10 questions) in which each question assesses a different personal value and uses a 6-point Likert scale.

(Based on Schwartz Theory of Basic Human Values)

2

Computing the relevance of each entity in ClimateKB to a user based on their personal values and displaying climate impacts in order of relevance.

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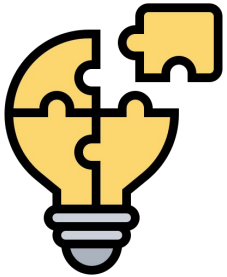
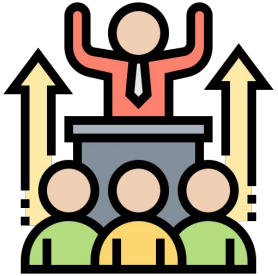
Future Outlook

In coming years, **climate change will worsen** and there will be more news coverage around its impacts. We hope this work helps:

Capture new impacts and scale ClimateKB to effectively engage more diverse audiences with our recommendation system.



Set the foundation to add climate change adaptations and solutions to ClimateKB.



Encourage others to find more applications for ClimateKB that help address climate change.

How you can get involved

Climate Mind

We are a growing volunteer team of over 20 people from over 10 countries
We all contribute remotely.

- We are always looking for more help, especially with the NLP aspect of this project.
- **Email us if interested in joining, ask us questions, or give feedback/advice!**
  hello@climatemind.org
- Also visit *climatemind.org* to see more information about the project overall.
  And try out the current version of the app for yourself!

Acknowledgements

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Scientists Speak Up

Stanford University