Q2'24 Council Meeting

April 9, 2024

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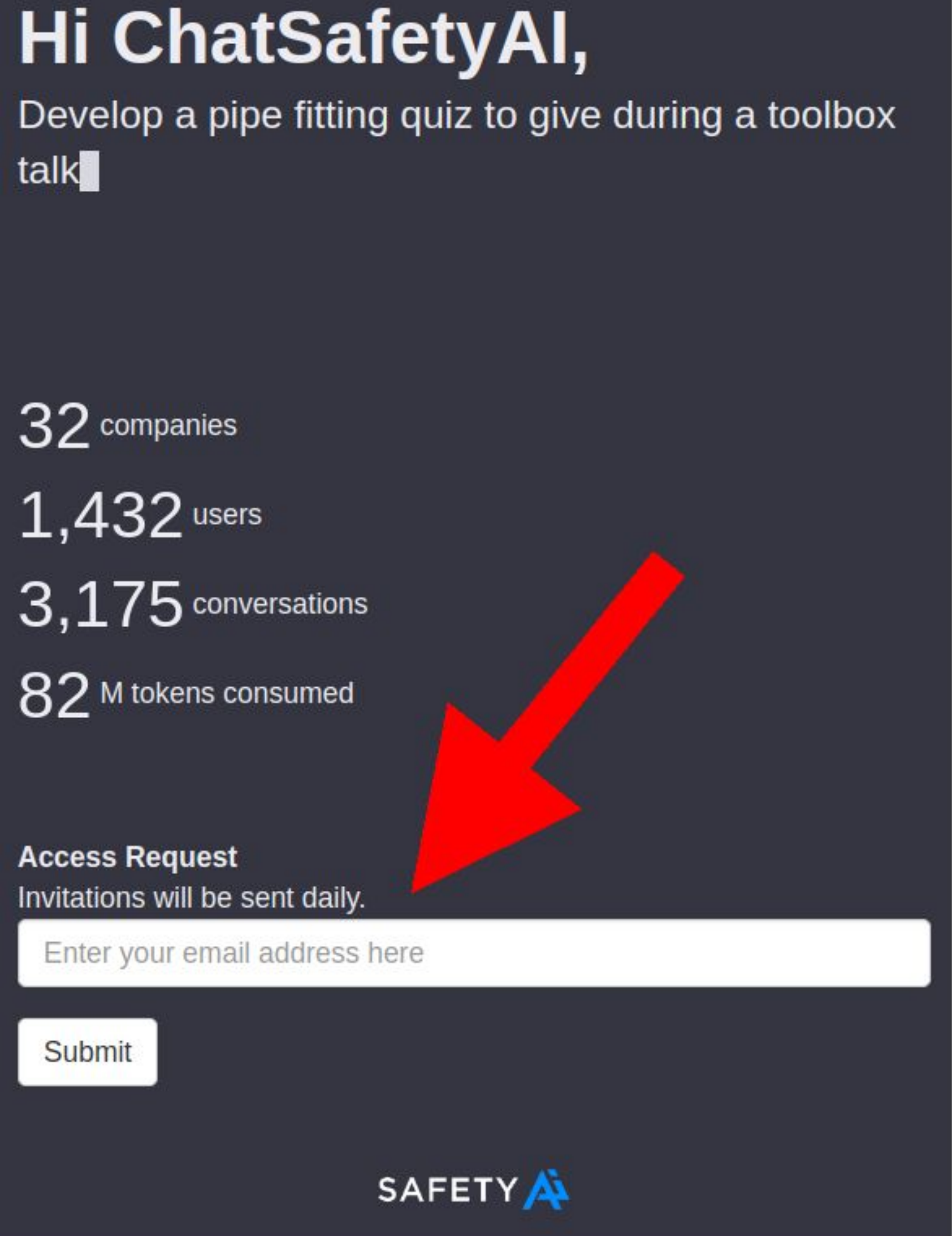# Agenda

- ChatSafetyAI Updates.

- Predictive Models Updates.

This call will be recorded.

App is Now Private

SAFETY A

- URL unchanged:
  https://safetyapp.shinyapps.io/chatsafetyai/

- But now, accessible only by council members.

- Users should request an invitation at:
  https://safetyapp.shinyapps.io/chatsafetyai_access_request/

Hi ChatSafetyAI,

Develop a pipe fitting quiz to give during a toolbox talk

32 companies

1,432 users

3,175 conversations

82 M tokens consumed

Access Request
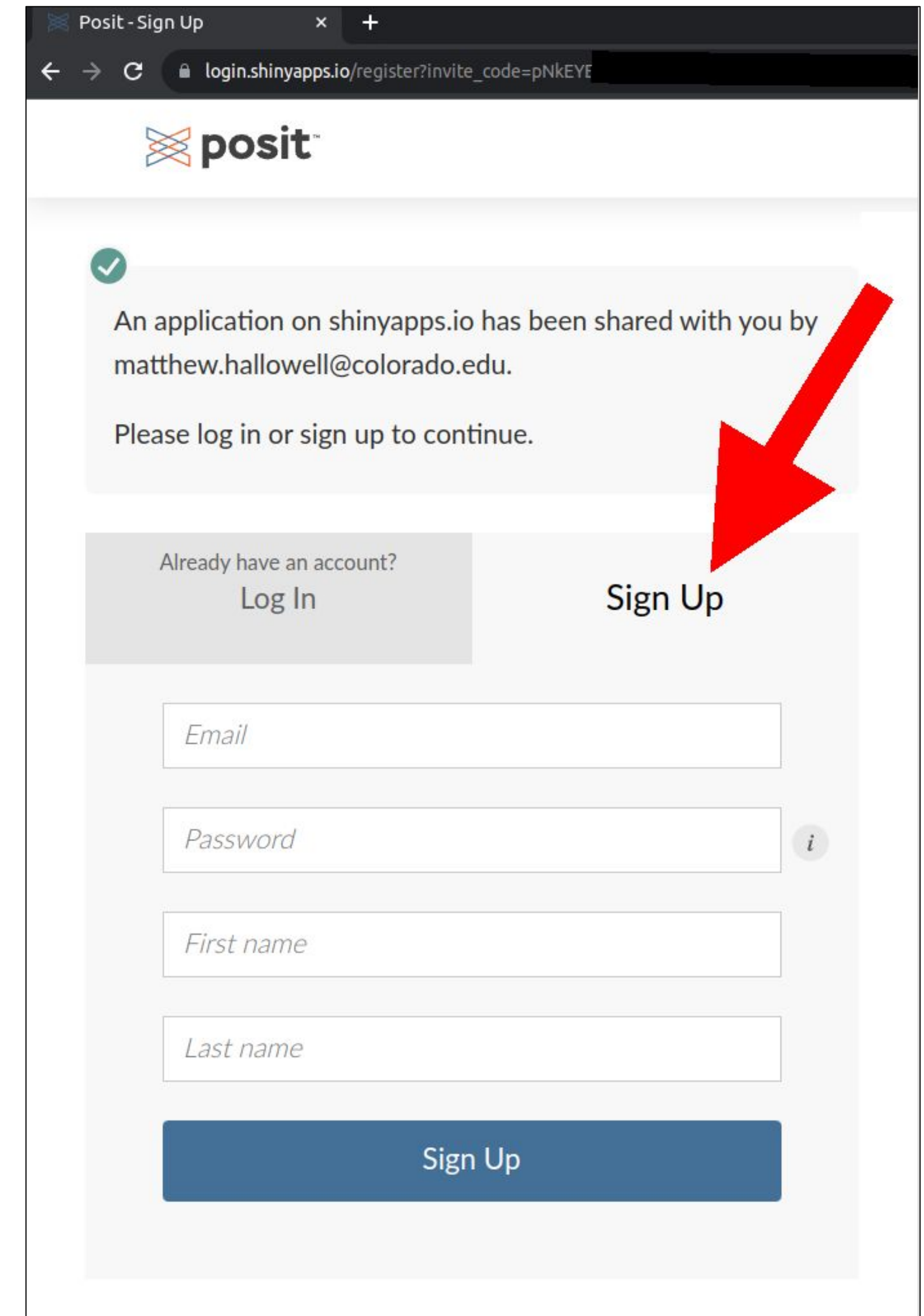Invitations will be sent daily.

Enter your email address here

Submit

SAFETY A

App is Now Private

SAFETY A

- Invitation asks user to sign up for an account.

- Use the same email address the invitation was sent to.

- No need to recreate an account for those who already have one (for dashboard, assistant...)

Advantages of Private Version

- Saving and reloading chat history (like in ChatGPT).

- Learning preferences of each user (language, role, desired output format…)

- Ability to call company's custom predictive models.

- Knowledge of the company's own data (incident and observations, internal documentation) => *only for the interested companies, I will ask you individually.*

These features will be implemented soon!

Advantages of Private Version SAFETY

Increased budgets, file upload capacity, conversation history:

- ○ 100k words, 10 turns.
- ○ Up to 10 MB per file (JPG / PNG / PDF / CSV).
- ○ ~75 pages / 50k words per PDF / CSV file.

Demo

- A free demo with a very limited budget has been created.

- Interested companies will join the council and:
  - Provide new use cases and feedback.
  - Share incident and observation datasets to make the [generic predictive models](#) stronger.

	Demo	SafetyAI Board
Engine	GPT-4	GPT-4
Conversation History	10k words, 5 turns	100k words, 10 turns
Max Chats per Session	4	12
PDF/CSV/Photo Upload	max 3 pages, 2 MB per file	max 75 pages, 10 MB per file
Budget per Session	80k words	unlimited
Budget per User	0.4M words	custom, min 10M words

Recent Progress Recap: Current Modes SAFETY⬚

- [Regulations](#) (OSHA + 9 Canadian provinces).
- [Predictions & Risk Analysis](#) (text or photo input).
- [Safety climate](#) survey response analysis.
- [Prejob safety brief](#) summarization and paperwork completion.
- [HECA from photo](#).
- [Free chat](#) for any general request (text, photo, PDF/CSV file input).

- Also, turn any conversation into a PPT presentation, or create one from scratch about any safety-related topic.

- Mode are automatically detected for each query, and can thus be combined within the same conversation.
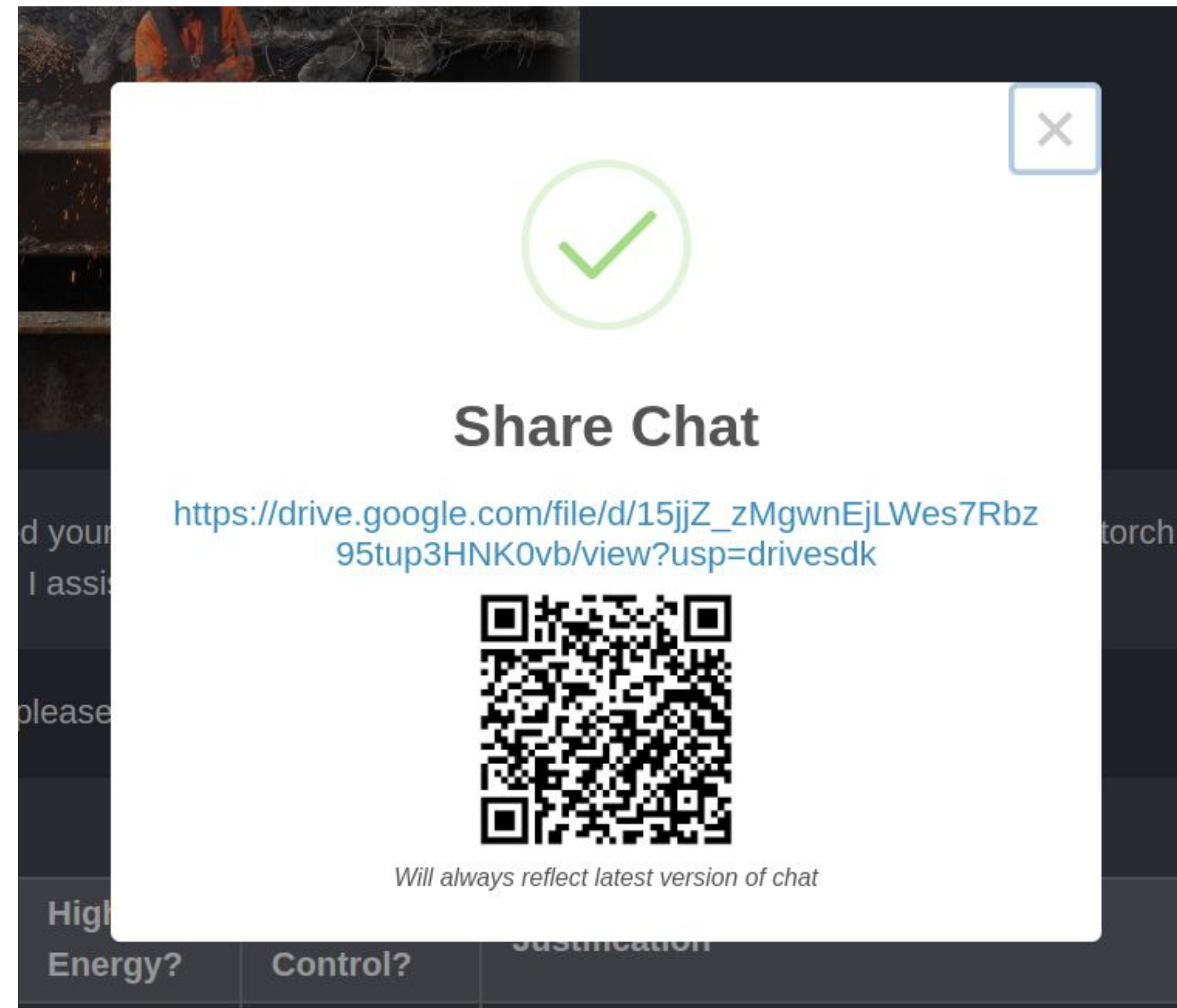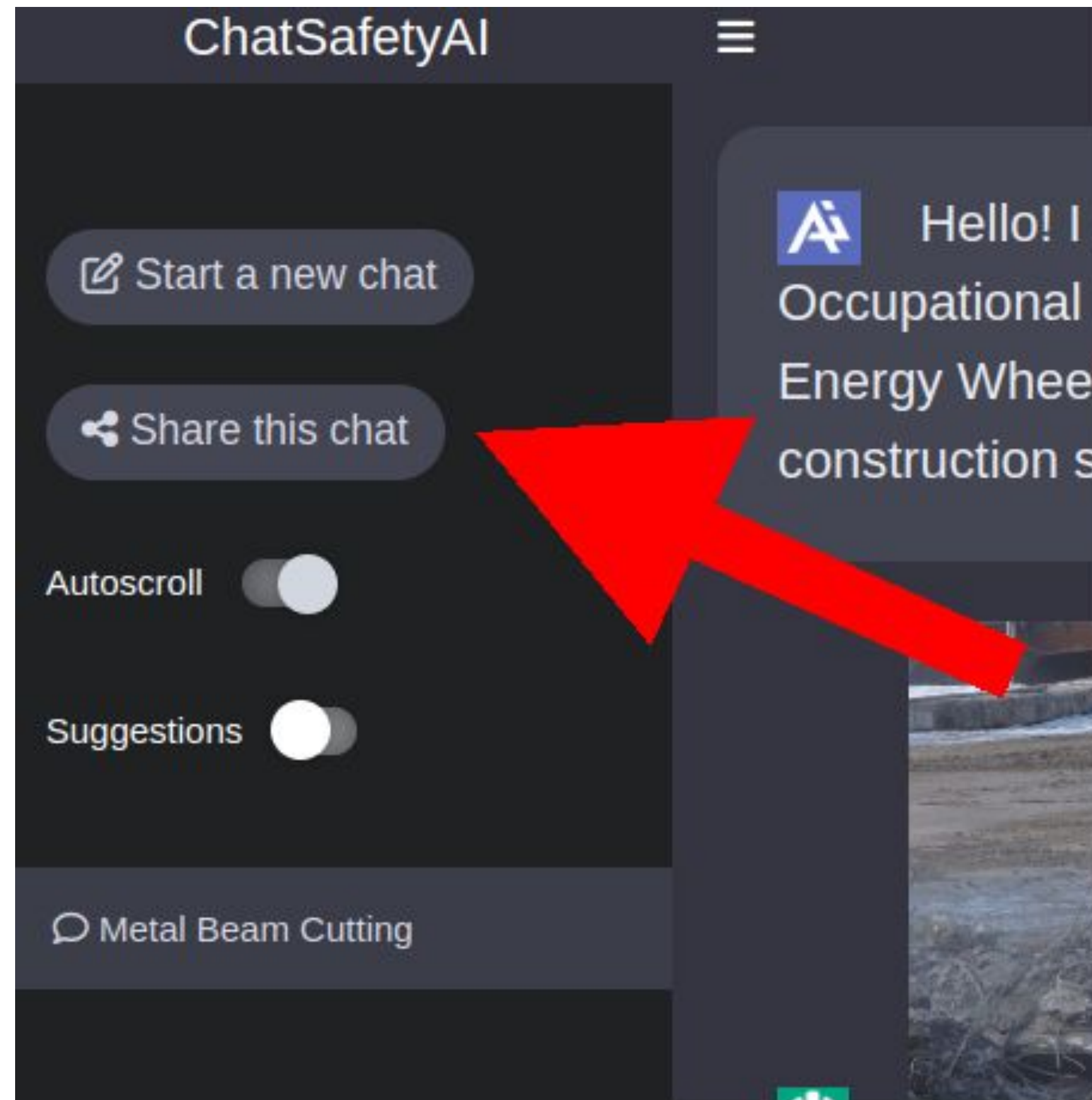
Recent Progress Recap

SAFETY A

- Better handling of Spanish and French queries.

- Regulations:

  ○ Saskatchewan now covered.

  ○ Improved search engine by using latest model from OpenAI, and query expansion.

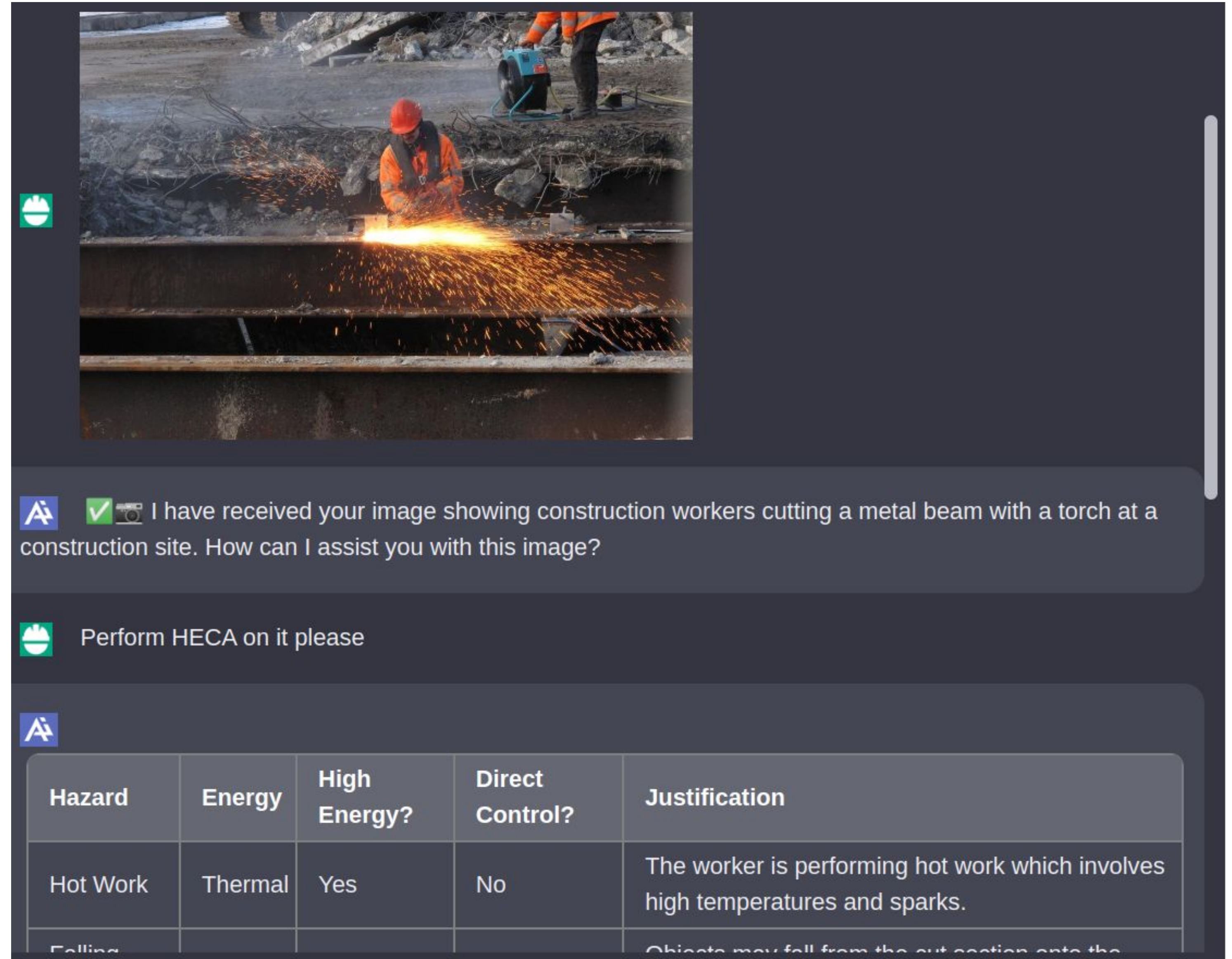| Eval benchmark	Previous (Dec'22) ada v2	New (Jan'24) text-embedding-3-small	New (Jan'24) text-embedding-3-large
MIRACL average	31.4	44.0	54.9
MTEB average	61.0	62.3	64.6

Recent Progress Recap

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- Conversation archiving and sharing.

Recent Progress Recap

SAFETY AI

- Deep photo understanding. You can ask any question, compare various photos, etc.

- HECA photo mode.

Recent Progress Recap

SAFETY

=> Next version of HECA photo mode to be deployed soon:

● Better knowledge of high energy and direct controls.

● Conversation awareness, to provide:

   ○ Contextual information about what's:

      ■ Not inferable from a photo (e.g., are lines energized, what are the current time and temperature…)

      ■ Out of frame (e.g., is there work above?)

   ○ Follow-up corrections.

Recent Progress Recap

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Plenty of other minor improvements and bug fixes!

Detailed version history is visible here.

Version History

04-07-24

- updating total number of conversations file on session end
- one additional example on desktops (7 instead of 6)
- added examples in "misc" category
- start to improve HECA knowledge and instructions (work in progress)

04-05-24

- fix word wrapping in tables
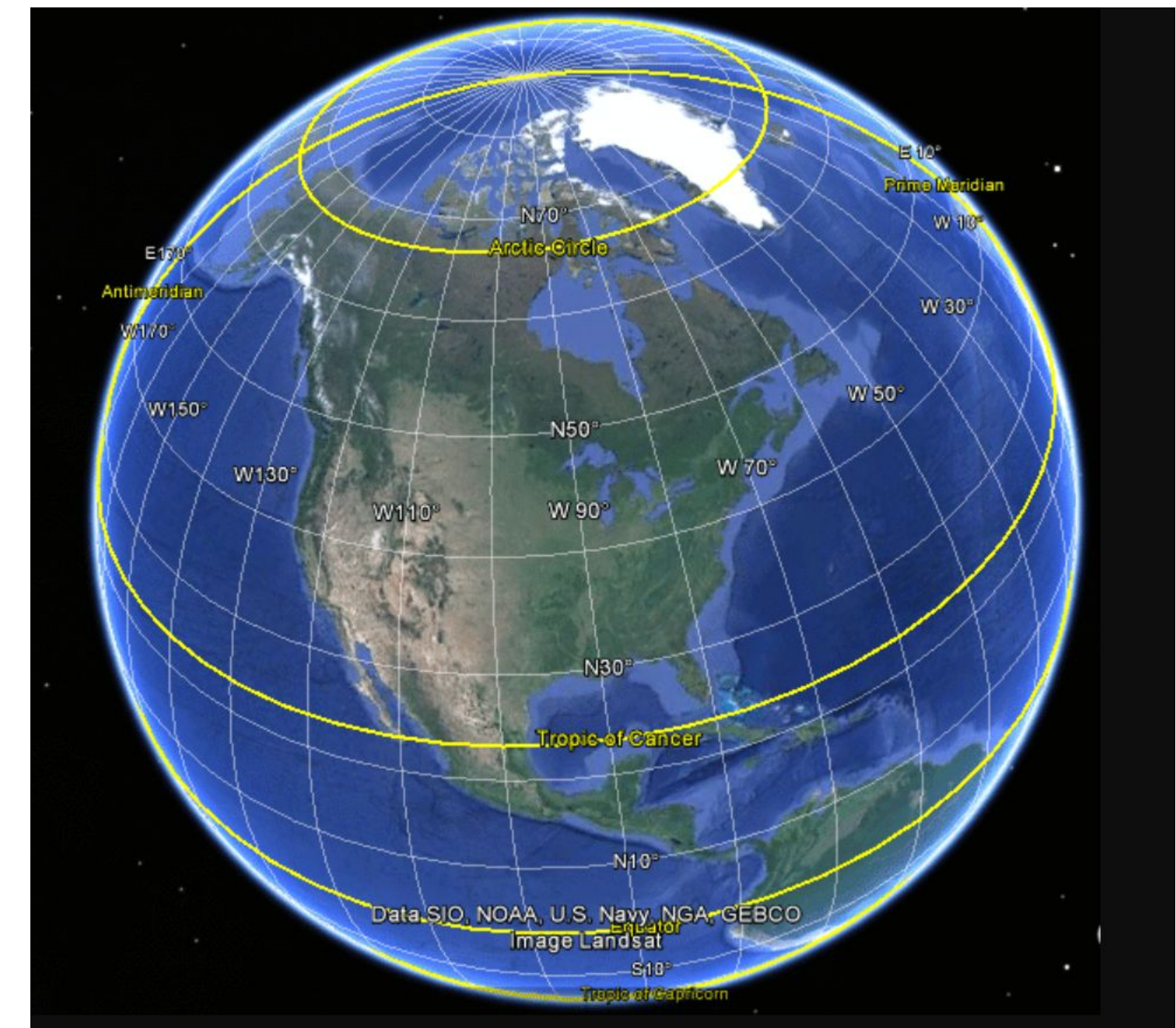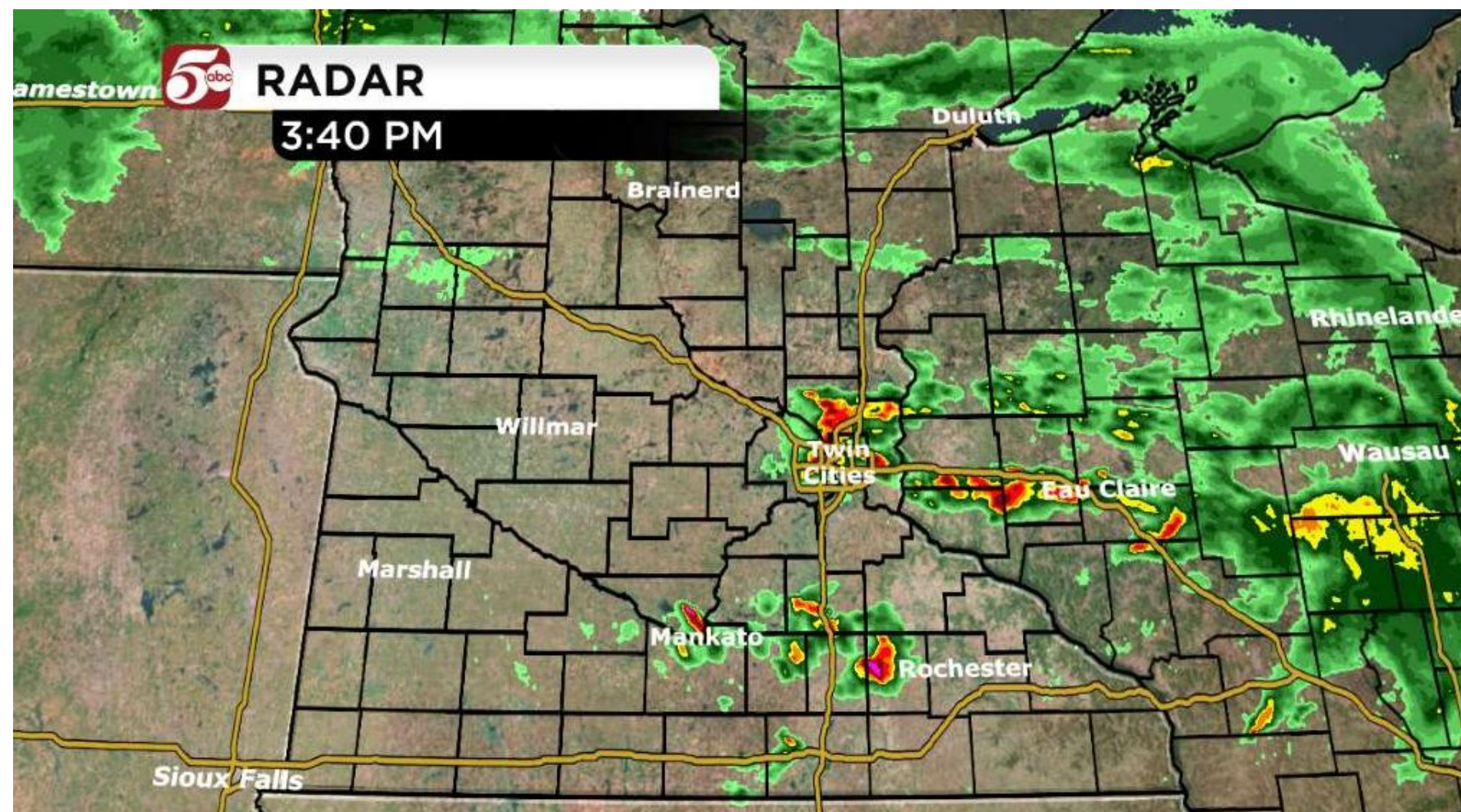- fix long URL regulation mode in tables

04-02-24

Predictive Models

- Call for 2023-2024 data updates soon, to improve:

  - Supermodels (aka generic models, [paper]).
  - Company-specific models.
  - Make them available in ChatSafetyAI.

- The arrival of new council members will further increase the amount of training data available.

- New: weather variables !

Predictive Models

- Until now, model input was ~100 attributes extracted from incident case narratives with NLP, covering work conditions, means, methods, and human factors.
- New: weather variables.

Predictive Models

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- Extract lat and long from each location description (when available and precise enough) using Google's geocoding API.
- Pass lat, long, time, and date, to OpenMeteo's [historical weather API](#) and collect 53 weather variables.

Predictive Models

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Experiments: models were trained with:

- Weather variables only.
- Attributes only.
- Weather variables + attributes.

Predictive Models

- Weather variables predict all safety outcomes better than chance. They even outperform attributes for injury severity.
- Weather + attributes is better than attributes alone for severity (37 vs 31), injury type (48 vs 42), and energy source (77.5 vs 76). For body part and accident type, attributes alone are slightly better.
- Most important weather variables are:
  - Soil_temperature_100_to_255cm, soil_moisture_100_to_255cm, surface_pressure, pressure_msl, temperature_2m_max.

Thank you!

https://safetyapp.shinyapps.io/chatsafetyai/