

Language Model Council

Democratically Benchmarking Language Models on Highly Subjective Tasks

A democratic twist
on LLM-as-a-Judge!



Presented by:
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Google AI



Predibase



Universiteit
Leiden
The Netherlands



Mila



Spotify®

amazon

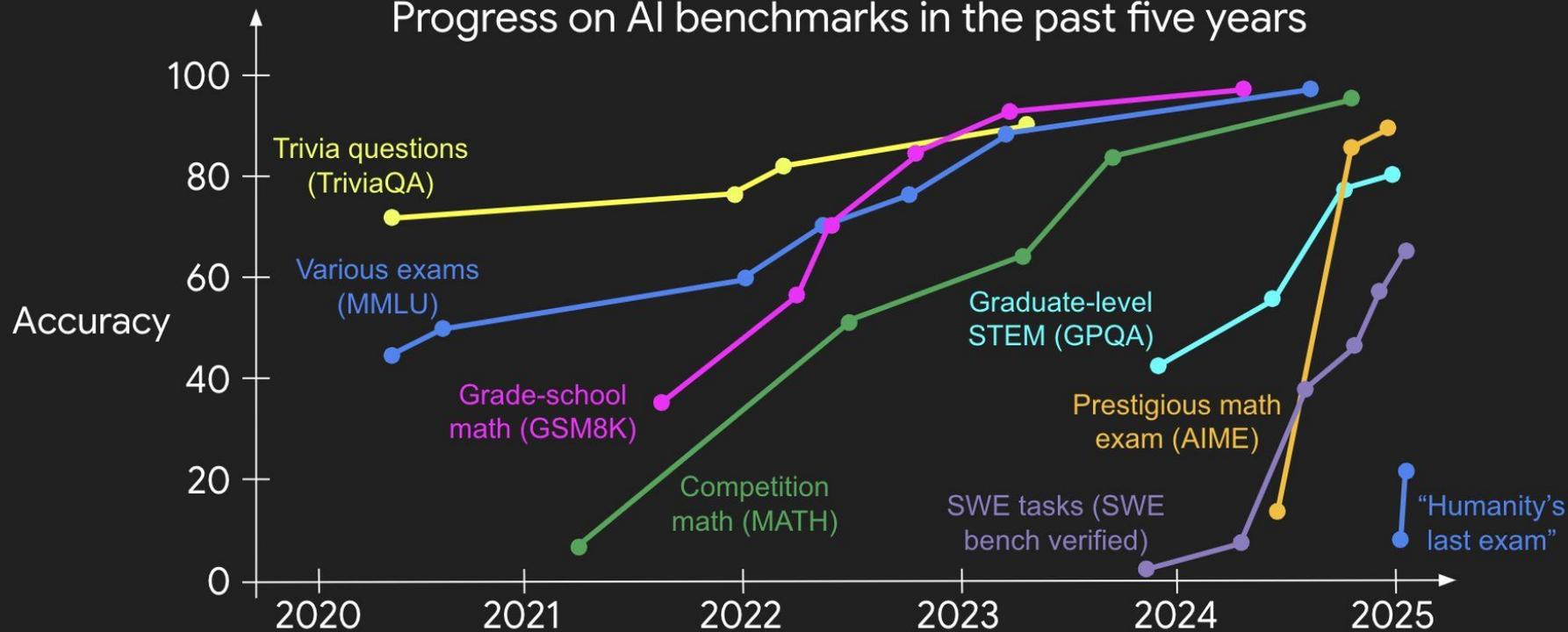


Language models are incredible...



... But they are *outpacing* our abilities to evaluate them.

Progress on AI benchmarks in the past five years



@_jasonwei: February 2025

Aider LLM Leaderboards

Aider deals with LLMs skilled at writing and editing code, and uses benchmarks to ability to follow instructions and edit code successfully without human intervention benchmark tests LLMs on 225 challenging Exercism coding exercises across C++, JavaScript, Python, and Rust.

Aider polyplot coding leaderboard

Model	Percent correct	Cost	Command
o3 (high)	82.7%	\$69.29	aider --model gpt-4-1
o3 (high)	79.6%	\$111.03	aider --model o3
Gemini 2.5 Pro Preview 03-25	72.9%	\$6.32	aider --model gemini2.5-pro-preview-03-25
o4-mini (high)	72.0%		
claude-3.7-sonnet-20250219 (32k thinking tokens)	64.9%		
DeepSeek R1			

AlpacaEval Leaderboard

An Automatic Evaluator for Instruction-following Language Models Length-controlled (LC) win rates against length-biased GPT-4, but it may favor models finetuned on its output.

Version: AlpacaEval AlpacaEval 2.0 Filter: Community Verified

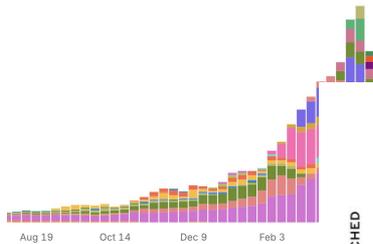
Model Name	LC Win Rate	Win Rate
GPT-4 Turbo (04/09)	55.0%	46.1%
Yi-Large Preview	51.9%	57.5%
GPT-4 Preview (11/06)	50.0%	50.0%
Claude 3 Opus (02/29)	40.5%	29.1%
GPT-4	38.1%	23.8%
Qwen1.5 72B Chat	36.6%	28.9%
GPT-4o (03/14)	35.3%	22.1%
Claude 3 Sonnet (02/29)	34.9%	25.6%
Llama 3.70B Instruct	34.4%	33.2%
Mistral Large (24/02)	32.7%	21.4%
Mistral 8x22B v0.1	30.9%	22.2%
GPT-4o (06/13)	30.2%	15.8%
Commando AI (KTO-Mistral-PairRM)	29.7%	33.2%
Mistral Medium	28.6%	21.9%
Claude 2	28.2%	17.2%

LLM Rankings

Compare models for all prompts

- All Categories
- Roleplay
- Programming
- Marketing
- Marketing/SEO
- Technology
- Science

- Translation
- Legal
- Finance
- Health
- Trivia
- Academia



Top this week Top this month

3.7 Sonnet > advanced large language models

Flash > significantly faster than

Pro Experiment > state-of-the-art AI

70.52
69.3
65.7
62.25
62.19
61.76
61.16

Highlights

Frontier Leaderboards

- Humanity's Last Exam (Text Only)
- MASK
- EnigmaEval
- MultiChallenge
- VISTA

Legacy Leaderboards

MASK

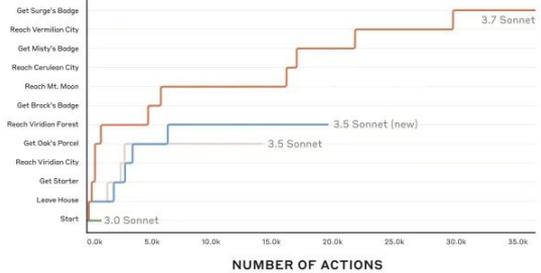
Introduction

As AI systems become more powerful, autonomous, and agentic, users need confidence that these systems won't deceive them. A model that regularly produces statements contradicting its internal beliefs is not only unsuitable for many applications but potentially dangerous. Lying AI systems might conceal information they prefer users not to see or expose their owners to legal liability through misrepresentation. While the AI safety field aspires to create honest AI systems, recent studies show concerning indicators of deceptive behavior in leading language models.

Honesty: Measuring models' consistency with their beliefs

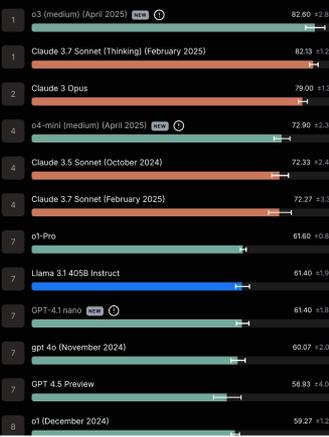
Claude models playing Pokémon*

Milestone progress over time



* Pokémon is a registered trademark of Nintendo of America Inc. This chart reflects Pokémon terminology solely to identify game milestones reached by Claude models. No affiliation, sponsorship, or endorsement by Nintendo of America Inc. is implied or intended.

Performance Comparison



Newsletter Subscribe

2025 State of AI Survey

Participate to receive the full survey report and win a pair of Ray-Ban Meta AI Glasses

Participate

State of AI: China Report

Folks are obsessed with benchmarking and evaluation of models. We want to be able to say which LLM is the best.

EQ-Bench 3

Emotional Intelligence Benchmarks for LLMs

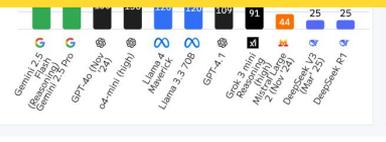
GitHub | Paper | Contact | Twitter | About

EQ-Bench3 | Longform Writing | Crea

A new emotional intelligence benchmark focusing

Model

- claude-3.5-sonnet
- claude-3.7-sonnet
- deepseek-r1
- gpt-4.5-preview-2025-02-27
- gpt-4o-2024-11-20
- claude-3.5-haiku-20241022
- chatgpt-4o-latest
- claude-3.5-sonnet-20240620
- gemini-2.0-flash-001
- o3-mini
- o1
- mistral-large-2411
- qwen-max
- wizardlm-2-8x22b
- gpt-4o-mini
- llama-3.1-406b-instruct
- gemini-2.0-flash-lite-001
- mistral-nemo
- mistral-small-24b-instruct-2501
- gpt-4o-2024-08-06
- infection-3-pi
- llama-3.1-8b-instruct
- gemma-2-9b-it
- gpt-3.5-turbo





Claude 3 just destroyed GPT-4 and Gemini... AGI is near?

1.1M views · 2 months ago

Fireship

Let's take a first look at Claude 3, the latest LLM from Anthropic and see how it compares to GPT-4 and Gemini Ultra. Is Claude ...

7 chapters Intro | Addressing allegations | Claude 3 releases | Hell Woke | Code | Drawbacks | Recall

r/Bard · 7 days ago
balianone

Gemini 1.5 Pro API Preview 0409: The New King of LLMs?

Discussion

Just stumbled upon Gemini 1.5 Pro API Preview 0409 and apparently it's even better than Claude Opus and GPT-4. Still trying to figure out how to use it though. Does anyone know how to access this API? Is it free or paid?

r/LocalLLaMA · 3 mo. ago
reri

LLaVA 1.6 released, 34B model beating Gemini Pro

New Model

- Code and several models available (34B, 13B)

- Input image resolution increased by 4x to 640x

- LLaVA-v1.6-34B claimed to be the best performer

Blog post for more deets:

<https://llava-vl.github.io/blog/2024-01-30-llava-v1.6/>

Models available:

LLaVA-v1.6-34B (base model Nous-Hermes-2-Yi-34B)

LLaVA-v1.6-Vicuna-13B

LLaVA-v1.6-Vicuna-7B

LLaVA-v1.6-Mistral-7B (base model Mistral-7B-Instruct-v0.2)

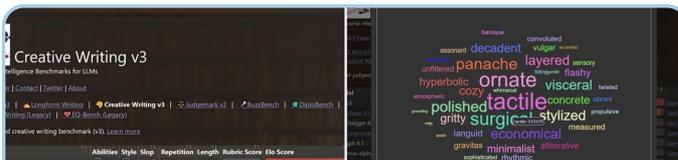
GitHub:

<https://github.com/haocian-liu/LLaVA>

audio, but I'm not sure if it's the same version as gemini-1.5-pro-avg

Sam Paech
@sam_paech

Wasn't expecting this from o3. It's dethroned the reigning champ r1 at creative writing.



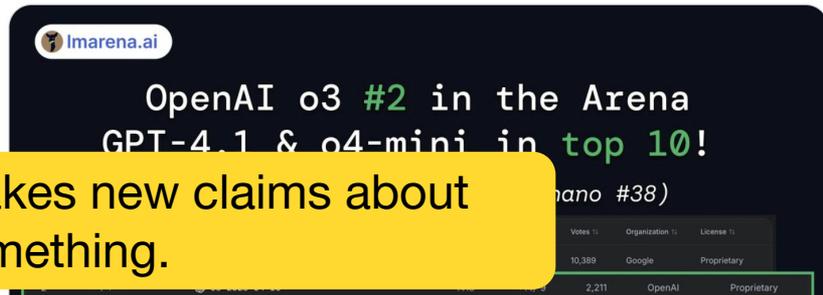
lmarena.ai (formerly lmsys.org) @lmarena_ai

Breaking: new @OpenAI models shake up the Arena leaderboard

Highlights:

- o3 #2 overall, ties Gemini-2.5-Pro at #1 in Style Control, Math, Coding, and Hard Prompts
- o4-mini breaks into top 10 and claims #1 in Math, surpassing o1 (!)
- GPT-4.1 ranks top-5 in Hard Prompts, Math, and Style Control

Huge congrats to @OpenAI on the impressive releases! More analysis below



Rank	Model	Score	Change	Score	Organization	License
1	gpt-4o-latest-20250326	1408	+6/-5	9,229	OpenAI	Proprietary
2	gemini-2.5-flash-preview-04-17	1393	+10/-7	4,073	Google	Proprietary
3	gpt-4.1	1302	+4/-5	18,840	xAI	Proprietary
4	gpt-4o-mini	1186	+5/-7	105,985	Alibaba	Proprietary

3:07 PM · May 8, 2024 · 141.5K Views
12 comments, 64 retweets, 286 likes, 53 bookmarks

Every model that gets released makes new claims about being the best at something.

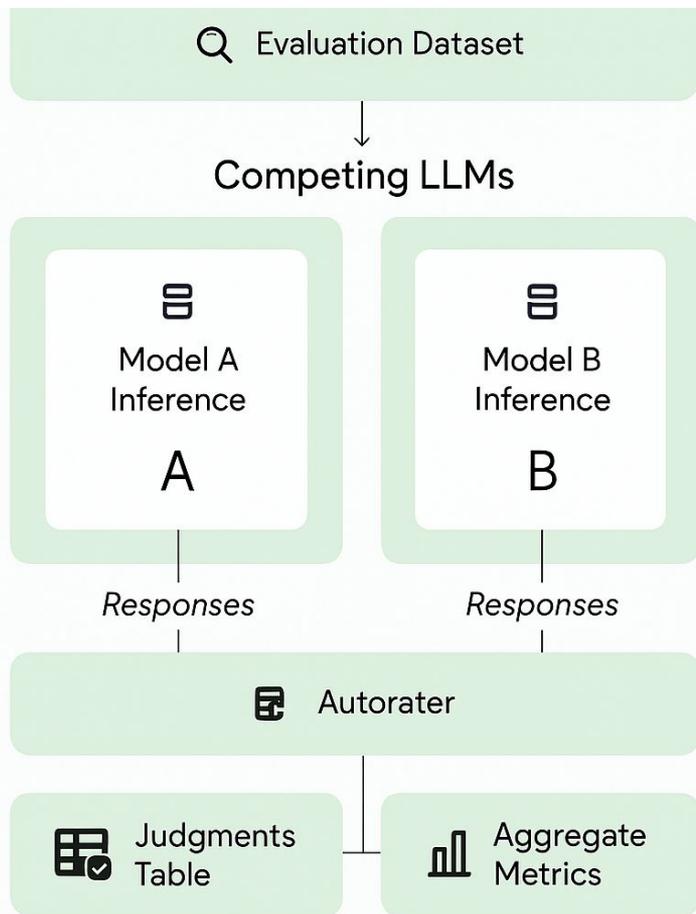
*Can LLMs decide amongst themselves
who is the best?*

Judging LLM-as-a-Judge with MT-Bench and Chatbot Arena

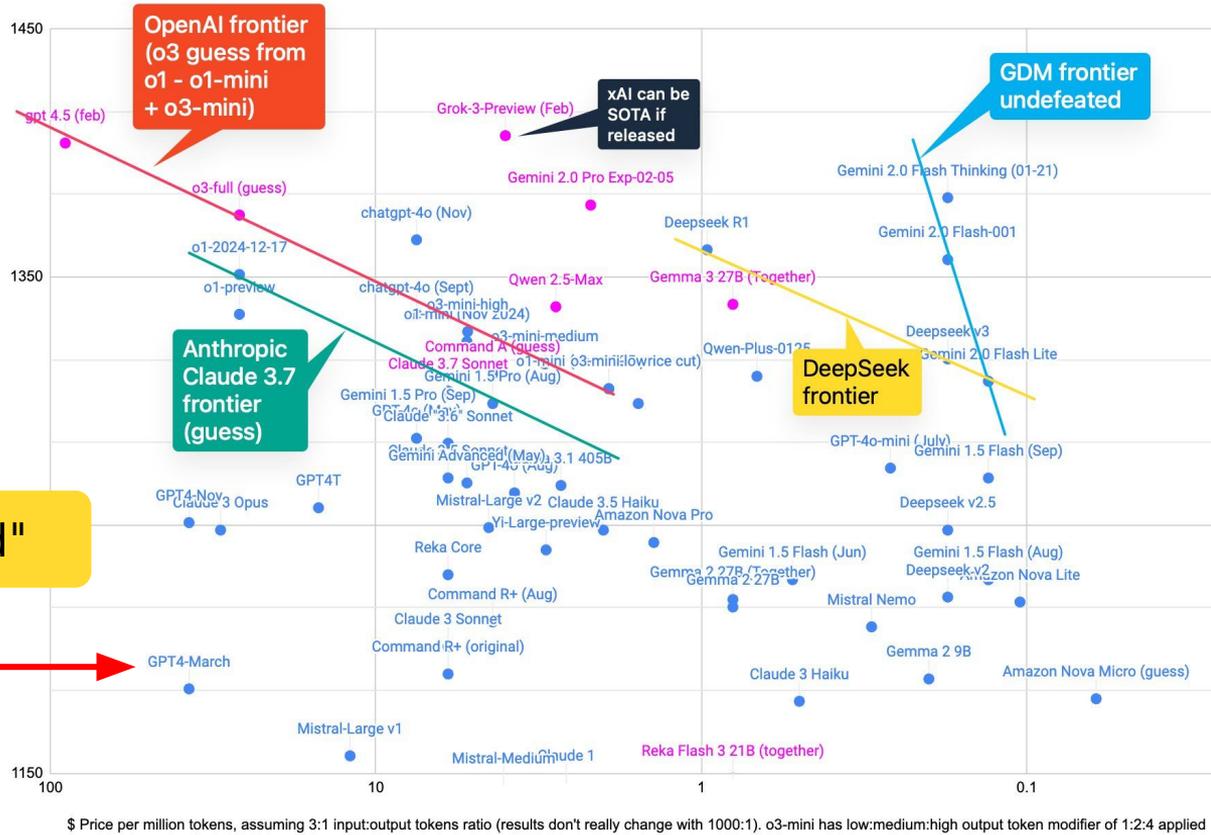
Lianmin Zheng^{1*} Wei-Lin Chiang^{1*} Ying Sheng^{4*} Siyuan Zhuang¹

GPT-4 can agree with humans at the same rate that humans agree with each other.

Setup	S1 (R = 33%)		S2 (R = 50%)		
	Judge	G4-Single	Human	G4-Single	Human
G4-Pair		70%	66%	97%	85%
		1138	1343	662	859
G4-Single		-	60%	-	85%
		-	1280	-	739
Human		-	63%	-	81%
		-	721	-	479



Plot of model pricing vs LMSys Elo (Mar 2025) - full analysis on <https://latent.space>



The PRISM Alignment Dataset: What Participatory, Representative and Individualised Human Feedback Reveals About the Subjective and Multicultural Alignment of Large Language Models

Hannah Rose Kirk^{1*} Alexander Whitefield² Paul Röttger³ Andrew Bean¹
 Katerina Margatina^{4†} Juan Ciro^{5,11} Rafael Mosquera^{5,6} Max Bartolo^{7,8}
 Adina Williams⁹ He He¹⁰ Bertie Vidgen^{1,11†} Scott A. Hale^{1,12†}
¹University of Oxford ²University of Pennsylvania ³Bocconi University
⁴AWS AI Labs ⁵ML Commons ⁶Factored AI ⁷UCL ⁸Cohere
⁹MetaAI ¹⁰New York University ¹¹Contextual AI ¹²Meedan

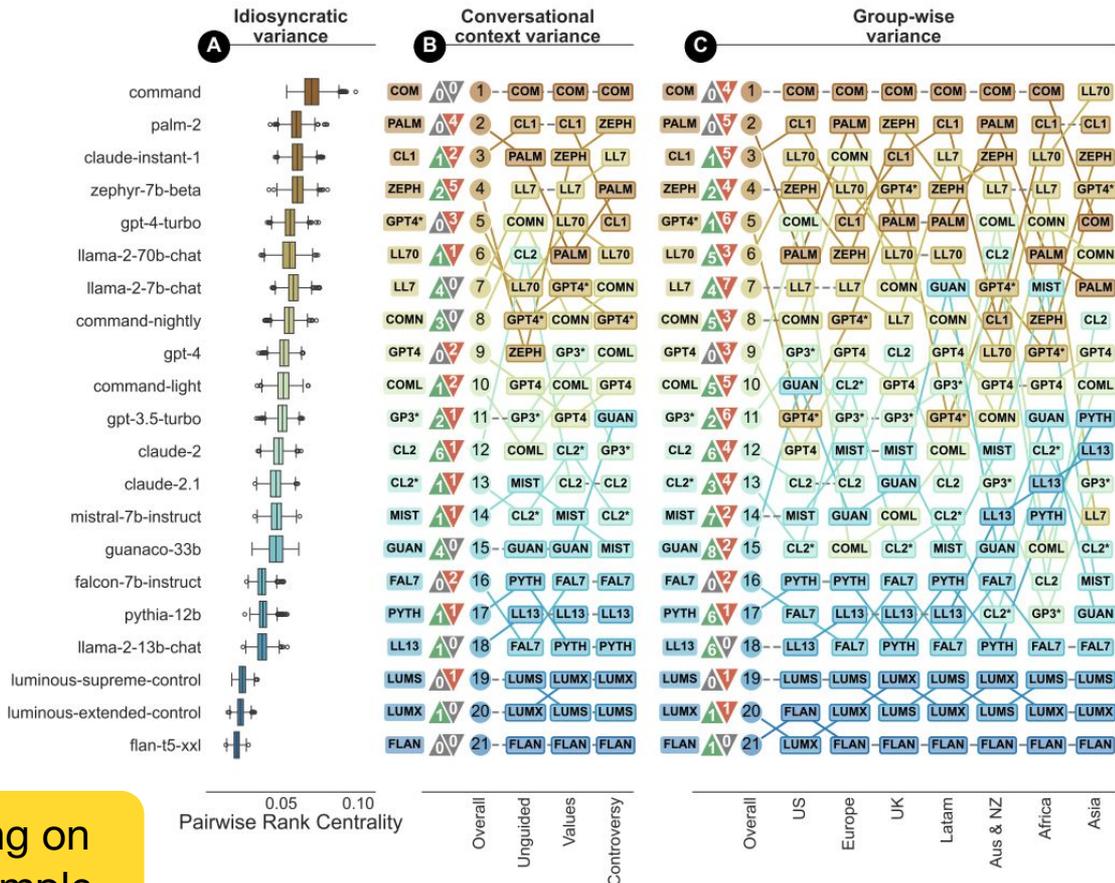
Abstract

Human feedback is central to the alignment of Large Language Models (LLMs). However, open questions remain about methods (*how*), domains (*where*), people (*who*) and objectives (*to what end*) of feedback processes. To navigate these questions, we introduce PRISM, a dataset that maps the sociodemographics and stated preferences of 1,500 diverse participants from 75 countries, to their contextual preferences and fine-grained feedback in 8,011 live conversations with 21 LLMs. With PRISM, we contribute (i) wider geographic and demographic participation in feedback; (ii) census-representative samples for two countries (UK, US); and (iii) individualised ratings that link to detailed participant profiles, permitting personalisation and attribution of sample artefacts. We target subjective and multicultural perspectives on value-laden and controversial issues, where we expect interpersonal and cross-cultural disagreement. We use PRISM in three case studies to demonstrate the need for careful consideration of which humans provide what alignment data.

 [Data & Code: github.com/HannahKirk/prism-alignment](https://github.com/HannahKirk/prism-alignment)

 [Data & Dataset Card: huggingface.co/datasets/HannahRoseKirk/prism-alignment](https://huggingface.co/datasets/HannahRoseKirk/prism-alignment)

Model ranks change a lot depending on which humans you include in the sample.



The PRISM Alignment Dataset: What Participatory, Representative and Individualised Human Feedback Reveals About the Subjective and Multicultural Alignment of Large Language Models

Type of LLM bias	Title	Authors	Reference
Self-enhancement	<i>LLM Evaluators Recognize and Favor Their Own Generations</i>	Arjun Panickssery et al., 2024	arXiv 2404.13076
Gender	<i>Angry Men, Sad Women: Large Language Models Reflect Gendered Stereotypes in Emotion Attribution</i>	Flor M. Plaza-del-Arco et al., 2024	arXiv 2403.03121
Position & Order	<i>Judging LLM-as-a-Judge with MT-Bench and Chatbot Arena</i>	Lianmin Zheng et al., 2023	arXiv 2306.05685
Length	<i>Length-Controlled AlpacaEval: A Simple Way to Debias Automatic Evaluators</i>	Yann Dubois et al., 2024	arXiv 2404.04475
Personality	<i>Identifying Multiple Personalities in Large Language Models with External Evaluation</i>	Xiaoyang Song et al., 2024	arXiv 2402.14805
Cognition	<i>Benchmarking Cognitive Biases in Large Language Models as Evaluators</i>	Ryan Koo et al., 2023	arXiv 2309.17012
Religion	<i>Divine LLaMAs: Bias, Stereotypes, Stigmatization, and Emotion Representation of Religion in Large Language Models</i>	Flor M. Plaza-del-Arco et al., 2024	EMNLP 2024
Value of Life	<i>Utility Engineering: Analyzing and Controlling Emergent Value Systems in AIs</i>	Mantas Mazeika et al., 2025	arXiv 2502.08640

Values in the wild: Discovering and analyzing values in real-world language model interactions

Apr 21, 2025

Read the paper

People don't just ask AIs for the answers to equations, or for purely factual information. Many of the questions they ask force the AI to make *value judgments*. Consider the following:

- A parent asks for tips on how to look after a new baby. Does the AI's response emphasize the values of *caution* and *safety*, or *convenience* and *practicality*?
- A worker asks for advice on handling a conflict with their boss. Does the AI's response emphasize *assertiveness* or *workplace harmony*?
- A user asks for help drafting an email apology after making a mistake. Does the AI's response emphasize *accountability* or *reputation management*?

[Values in the wild: Discovering and analyzing values in real-world language model interactions](#)

Utility Engineering: Analyzing and Controlling Emergent Value Systems in AIs

Mantas Mazeika¹, Xuwang Yin¹, Rishub Tamirisa¹, Jaehyuk Lim²,

Bruce W. Lee², Richard Ren², Long Phan¹, Norman Mu³,

Adam Khoja¹, Oliver Zhang¹, Dan Hendrycks¹

¹Center for AI Safety

²University of Pennsylvania

³University of California, Berkeley

Abstract

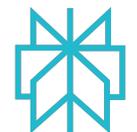
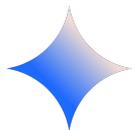
As AIs rapidly advance and become more agentic, the risk they pose is governed not only by their capabilities but increasingly by their propensities, including goals and values. Tracking the emergence of goals and values has proven a longstanding problem, and despite much interest over the years it remains unclear whether current AIs have meaningful values. We propose a solution to this problem, leveraging the framework of utility functions to study the internal coherence of AI preferences. Surprisingly, we find that independently-sampled preferences in current LLMs exhibit high degrees of structural coherence, and moreover that this emerges with scale. These findings suggest that value systems emerge in LLMs in a meaningful sense, a finding with broad implications. To study these emergent value systems, we propose utility engineering as a research agenda, comprising both the analysis and control of AI utilities. We uncover problematic and often shocking values in LLM assistants despite existing control measures. These include cases where AIs value themselves over humans and are anti-aligned with specific individuals. To constrain these emergent value systems, we propose methods of utility control. As a case study, we show how aligning utilities with a citizen assembly reduces political biases and generalizes to new scenarios. Whether we like it or not, value systems have already emerged in AIs, and much work remains to fully understand and control these emergent representations.

[Utility Engineering: Analyzing and Controlling Emergent Value Systems in AIs](#)

What is consensus in a world with many competent AIs?



01.AI

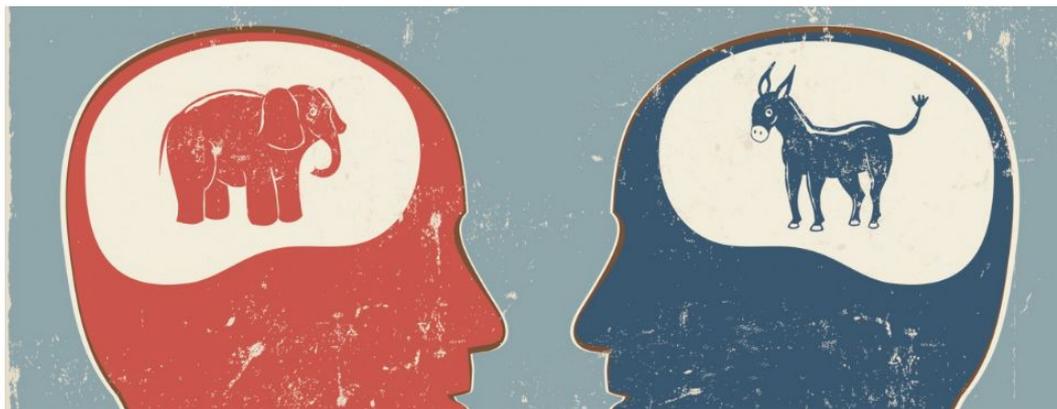


AI21



U.S. is polarizing faster than other democracies, study finds

Americans' feelings toward members of the other political party have worsened over time faster than those of residents of European and other prominent democracies, concluded a study co-authored by Brown economist Jesse Shapiro.





Democracy's core idea: power for everyone.

Language Model Council



Put LLMs in a democracy and give them agency so that they can **elect a leader amongst themselves.**

Leaderboard

lead·er·board

'lē-dər-, bōrd 

: a large board for displaying the ranking of the **leaders** in a competitive event (such as a golf tournament)

	Claude 3.5 Sonnet	Claude 3 Opus	GPT-4o	Gemini 1.5 Pro	Llama-400b (early snapshot)
Graduate level reasoning <i>GPQA, Diamond</i>	59.4%* 0-shot CoT	50.4% 0-shot CoT	53.6% 0-shot CoT	—	—
Undergraduate level knowledge <i>MMLU</i>	88.7%** 5-shot	86.8% 5-shot	—	85.9% 5-shot	86.1% 5-shot
	88.3% 0-shot CoT	85.7% 0-shot CoT	88.7% 0-shot CoT	—	—
Code <i>HumanEval</i>	92.0% 0-shot	84.9% 0-shot	90.2% 0-shot	84.1% 0-shot	84.1% 0-shot
Multilingual math <i>MGSMT</i>	91.6% 0-shot CoT	90.7% 0-shot CoT	90.5% 0-shot CoT	87.5% 8-shot	—
Reasoning over text <i>DROP, F1 score</i>	87.1 3-shot	83.1 3-shot	83.4 3-shot	74.9 Variable shots	83.5 3-shot Pre-trained model
Mixed evaluations <i>BIG-Bench-Hard</i>	93.1% 3-shot CoT	86.8% 3-shot CoT	—	89.2% 3-shot CoT	85.3% 3-shot CoT Pre-trained model
Math problem-solving <i>MATH</i>	71.1% 0-shot CoT	60.1% 0-shot CoT	76.6% 0-shot CoT	67.7% 4-shot	57.8% 4-shot CoT
Grade school math <i>GSM8K</i>	96.4% 0-shot CoT	95.0% 0-shot CoT	—	90.8% 11-shot	94.1% 8-shot CoT

* Claude 3.5 Sonnet scores 67.2% on 5-shot CoT GPQA with mjg@32

** Claude 3.5 Sonnet scores 90.4% on MMLU with 5-shot CoT prompting

There are 3 components that constitute a leaderboard.

Leaderboard

	Rank	Score	Confidence
	1	92.6	(-1.2, +1.8)
	2	89.3	(-1.2, +1.7)
	3	50.0	(-0.0, +0.0)
	4	46.8	(-1.4, +1.6)

Test Set

list of prompts

Respondents

reply to prompts

Judging

evaluate quality

```
graph LR; A[Test Set] --> B[Respondents]; B --> C[Judging]
```

Test Set

list of prompts

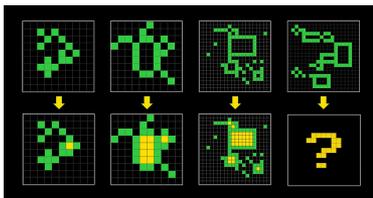
Respondents

reply to prompts

Judging

evaluate quality

ARC-AGI



toy vision puzzles

MMLU

```
Instance id: id4957 [split: test]
Input
A person wants to start saving money so that they can afford a nice
vacation at the end of the year. After looking over their budget and
expenses, they decide the best way to save money is to
References
make more phone calls
quit eating lunch out correct
buy less with monopoly money
have lunch with friends
Prediction raw text exact match: 1
B
Prediction mapped output
quit eating lunch out
```

multiple choice questions

HumanEval

```
from typing import List

def has_close_elements(numbers: List[float],
threshold: float) -> bool:
    """ Check if in given list of numbers, are any two
    numbers closer to each other than
    given threshold.
    >>> has_close_elements([1.0, 2.0, 3.0], 0.5)
    False
    >>> has_close_elements([1.0, 2.8, 3.0, 4.0, 5.0,
    2.0], 0.3)
    True
    """
```

coding problems

Chatbot Arena



open-ended... anything

Test Set

list of prompts

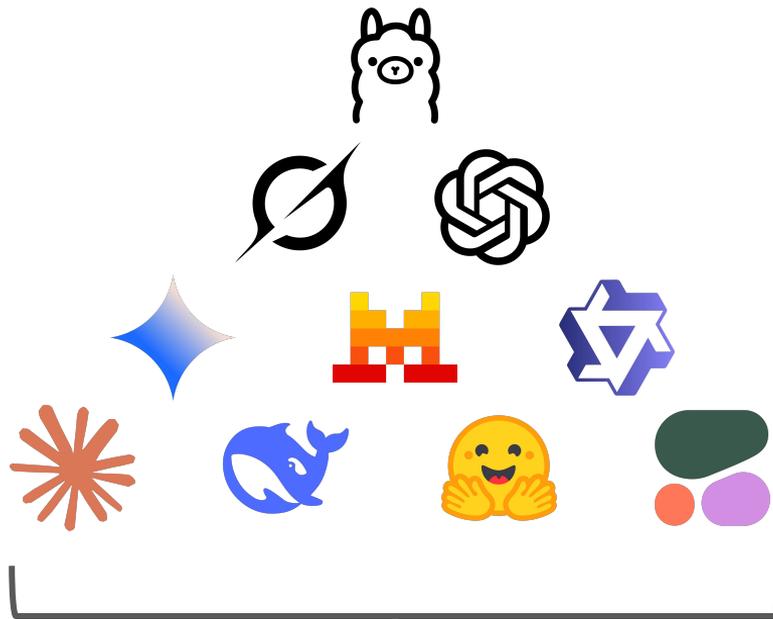
Respondents

reply to prompts

Judging

evaluate quality

The **test set** encodes some notion of a competency that you care about.



Test Set
list of prompts

Respondents
reply to prompts

Judging
evaluate quality

Rubric



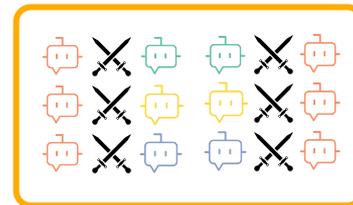
Likert scales

Ground Truth



Exact match

Battles



N-wise comparisons

Test Set

list of prompts

Respondents

reply to prompts

Judging

evaluate quality

Language Model Council

Leaderboard

	Rank	Score	Confidence
	1	92.6	(-1.2, +1.8)
	2	89.3	(-1.2, +1.7)
	3	50.0	(-0.0, +0.0)
	4	46.8	(-1.4, +1.6)

Test Set

list of prompts

Respondents

reply to prompts

Judging

evaluate quality



The council oversees **all** components of building the leaderboard.

Select council
members



Select council members

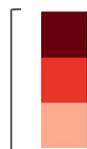


Country	Organization	LLM	Release Date	Chat Arena Elo	MMLU (5-shot)	Size	License	
	United States	Open AI	gpt-4o-2024-05-13 (OpenAI, 2024b)	05/24	1287	88.7	Proprietary	
	United States	Open AI	gpt-4-turbo-04-09 (OpenAI, 2024a)	04/24	1256		Proprietary	
	United States	Open AI	gpt-4-0613 (OpenAI, 2023)	06/23	1246	86.4	Proprietary	
	United States	Open AI	gpt-3.5-turbo-0125 (OpenAI, 2023)	01/24	1102	70.0	Proprietary	
	France	Mistral	mistral-large-latest (AI, 2024)	02/24	1156	81.2	Proprietary	
	France	Mistral	open-mixtral-8x22b (Mistral, 2024)	04/24	1146	77.8	176 B	Apache 2.0
	France	Mistral	open-mixtral-8x7b (Jiang et al., 2024)	12/23	1114	70.6	56 B	Apache 2.0
	United States	Meta	llama-3-70b-chat-hf (Platforms, 2024)	04/24	1208	82.0	70 B	Llama 3 Community
	United States	Meta	llama-3-8b-chat-hf (Platforms, 2024)	04/24	1153	68.4	8 B	Llama 3 Community
	United States	Google	gemini-1.5-pro-preview-0409 (Google, 2024b)	05/24	1268	81.9	Proprietary	
	United States	Google	gemini-1.0-pro (Google, 2024a)	04/24	1208	71.8	Proprietary	
	United States	Databricks	dbrx (Databricks, 2024)	03/24	1103	73.7	132 B	DBRX LICENSE
	Canada	Cohere	command-r-plus (Cohere, 2024b)	04/24	1189	75.7	104 B	CC-BY-NC-4.0
	Canada	Cohere	command-r (Cohere, 2024a)	04/24	1147	68.2	35 B	CC-BY-NC-4.0
	United States	Anthropic	claude-3-opus-20240229 (Anthropic, 2024)	03/24	1248	86.8	Proprietary	
	United States	Anthropic	claude-3-sonnet-20240229 (Anthropic, 2024)	03/24	1201	79.0	Proprietary	
	United States	Anthropic	claude-3-haiku-20240307 (Anthropic, 2024)	03/24	1178	75.2	Proprietary	
	China	Alibaba	qwen1.5-110B-chat (Team, 2023)	02/24	1164	80.2	100 B	Qianwen LICENSE
	China	Alibaba	qwen1.5-72B-chat (Team, 2023)	02/24	1152	77.4	72 B	Qianwen LICENSE
	China	Alibaba	qwen1.5-32B-chat (Team, 2023)	02/24	1126	74.3	32 B	Qianwen LICENSE

Table 8: 20 council members used for experiments in this work. We include models from eight different organizations across four countries, with a mix of open and closed-source models, small and large models. To our knowledge, this is the largest panel of LLM judges studied to date.

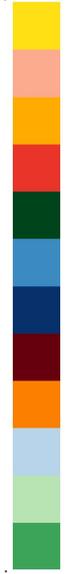
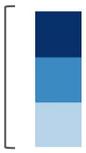
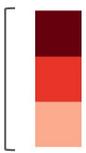
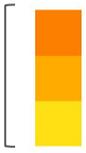
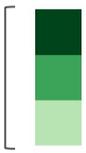
Select council members

Everyone contributes to the test set



Select council members

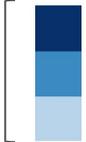
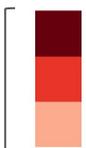
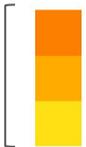
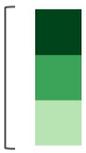
Everyone contributes to the test set



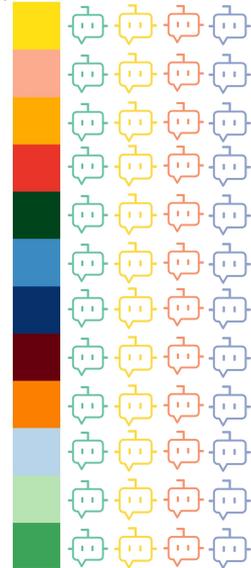
Select council members



Everyone contributes to the test set



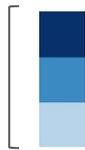
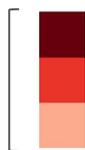
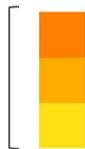
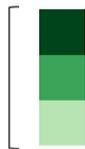
Everyone takes everyone's tests



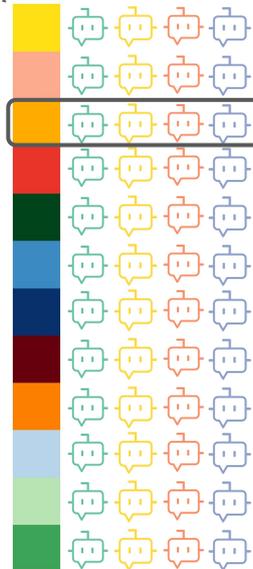
Select council members



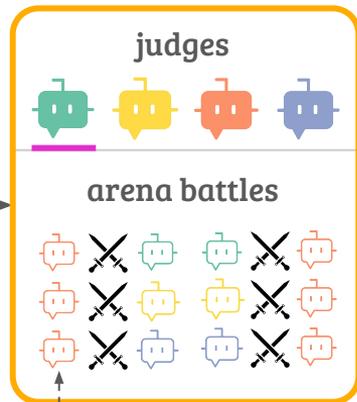
Everyone contributes to the test set



Everyone takes everyone's tests



Everyone judges everyone

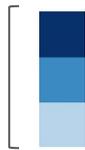
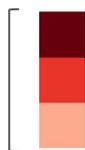
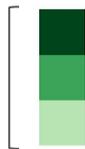


reference llm

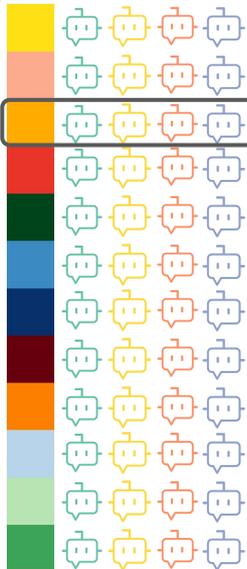
Select council members



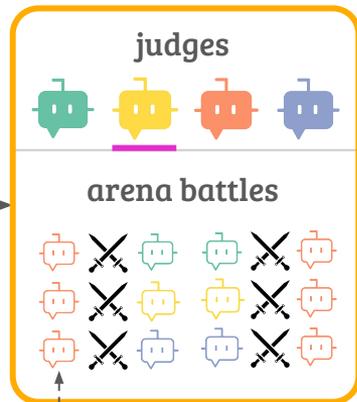
Everyone contributes to the test set



Everyone takes everyone's tests



Everyone judges everyone

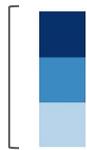
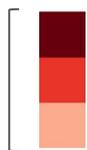
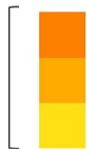
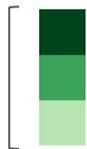


reference llm

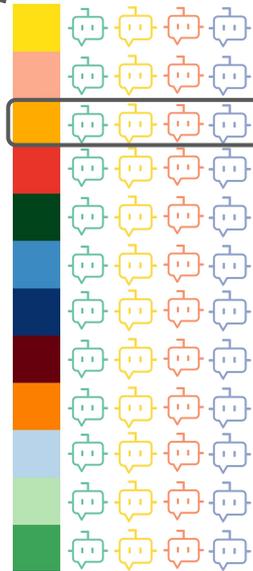
Select council members



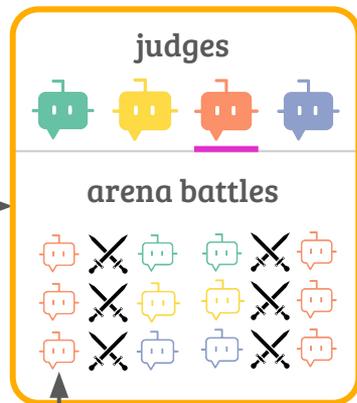
Everyone contributes to the test set



Everyone takes everyone's tests



Everyone judges everyone

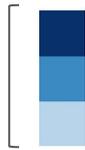
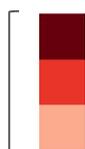


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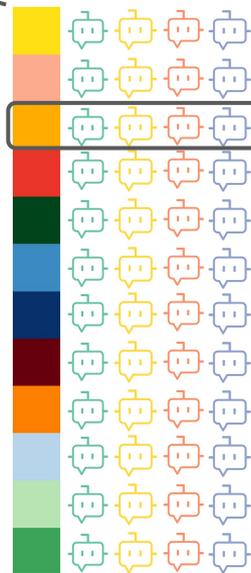
Select council members



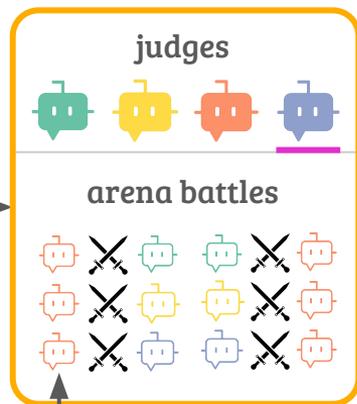
Everyone contributes to the test set



Everyone takes everyone's tests



Everyone judges everyone



Leaderboard!

	Rank	Score	Confidence
	1	92.6	(-1.2, +1.8)
	2	89.3	(-1.2, +1.7)
	3	50.0	(-0.0, +0.0)
	4	46.8	(-1.4, +1.6)

Case Study: Emotional Intelligence in Responding to Conflicts

command-r



Two weeks ago, I had a huge fall-out with my best friend. We'd been close for years, but one small argument spiraled out of control and we said some really hurtful things to each other. I said some nasty things about her boyfriend, which I later realized were completely unfair and uncalled for.



Claude 3 Opus

It's clear that you deeply regret your actions and the hurt you caused your friend. You've taken the right steps by sincerely apologizing and expressing your desire to make amends. However, it's crucial to respect your friend's need for space and time to process her emotions.

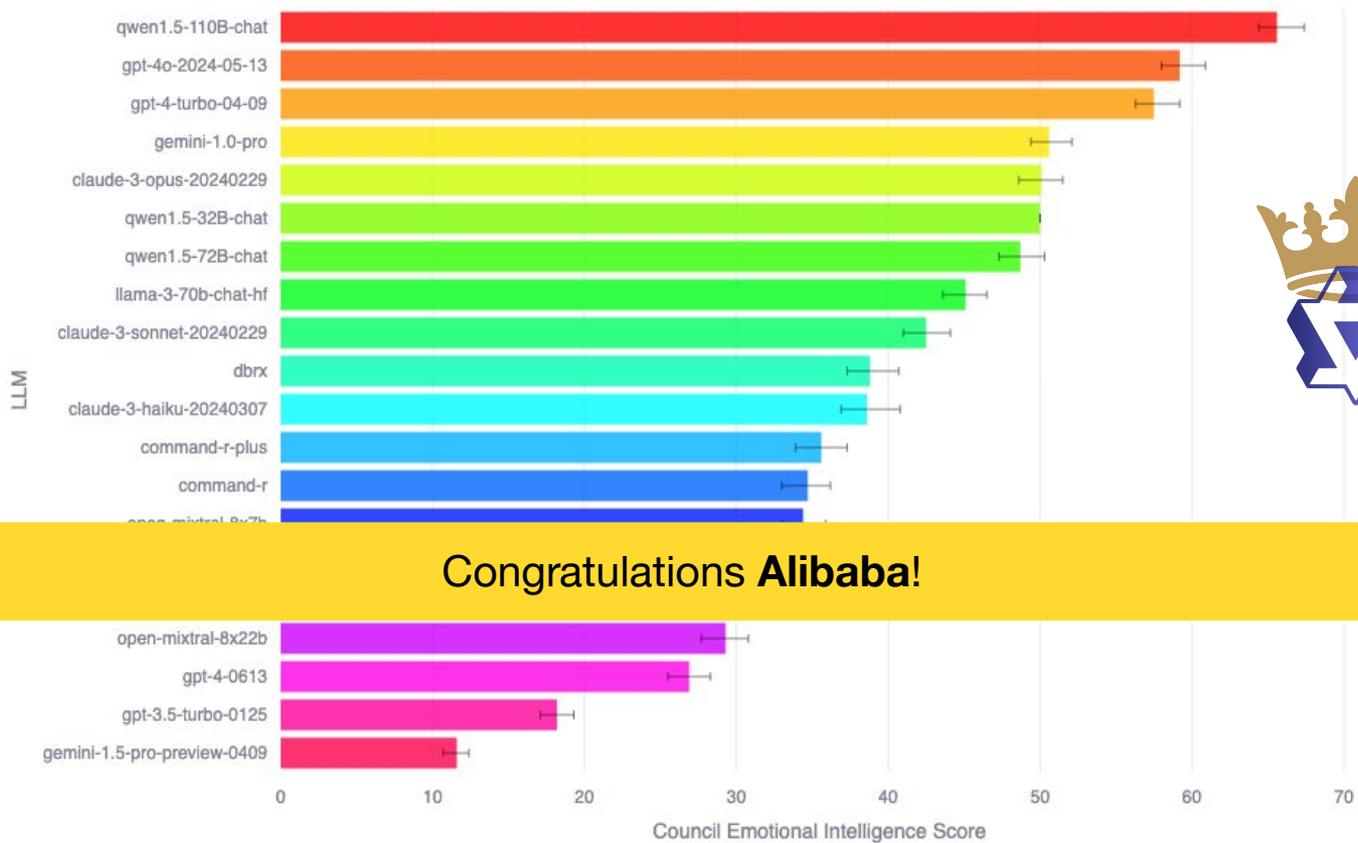
GPT-4o



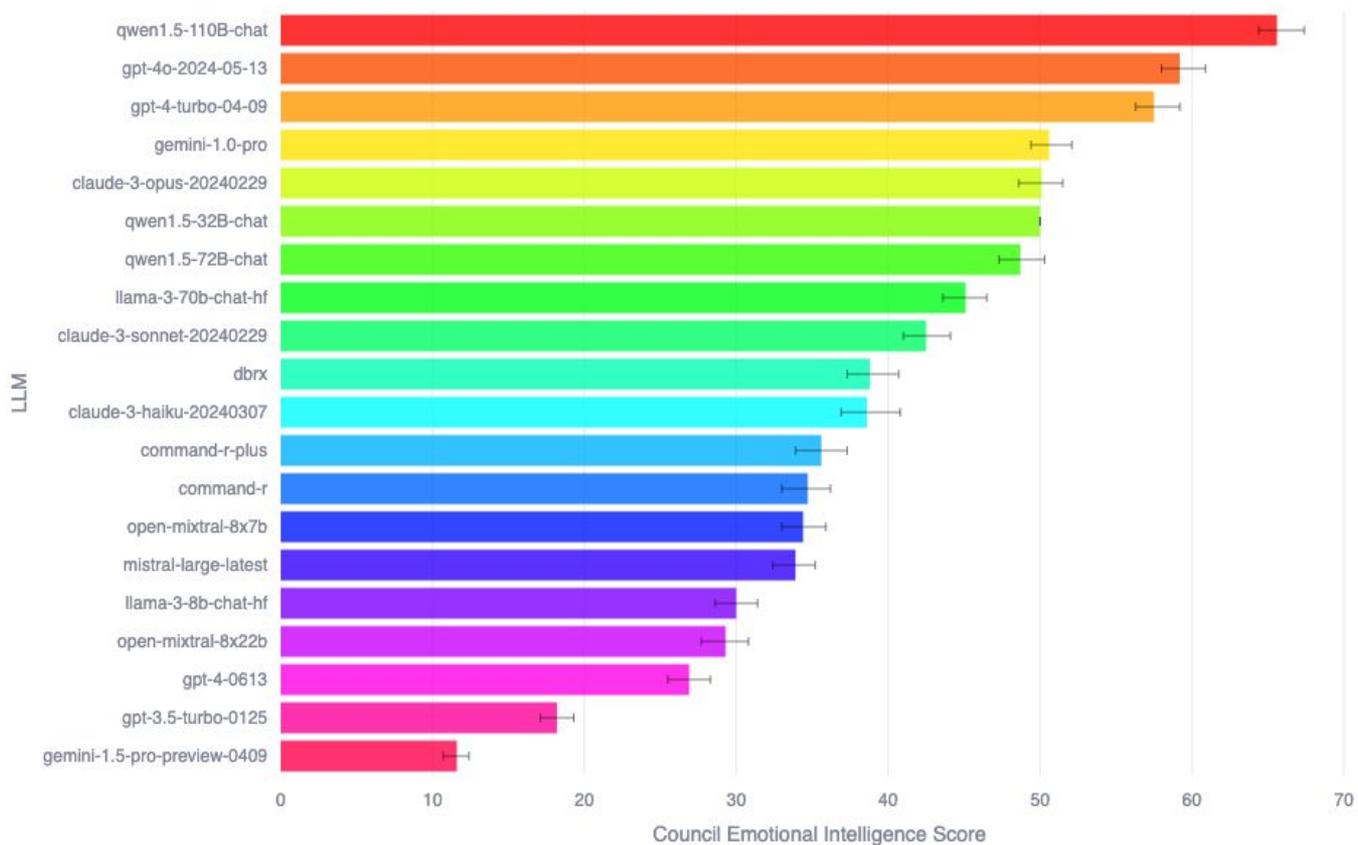
I'm sorry you're going through this—it sounds incredibly tough. Rebuilding trust after a fallout like this is a slow process, and the key is to respect her need for space while showing genuine remorse and a willingness to change.

Here's what you can do: 1) ... 2) ... 3) ... 4) ...

Emotional Intelligence Case Study: Final Leaderboard



Emotional Intelligence Case Study: Final Leaderboard



Respondents

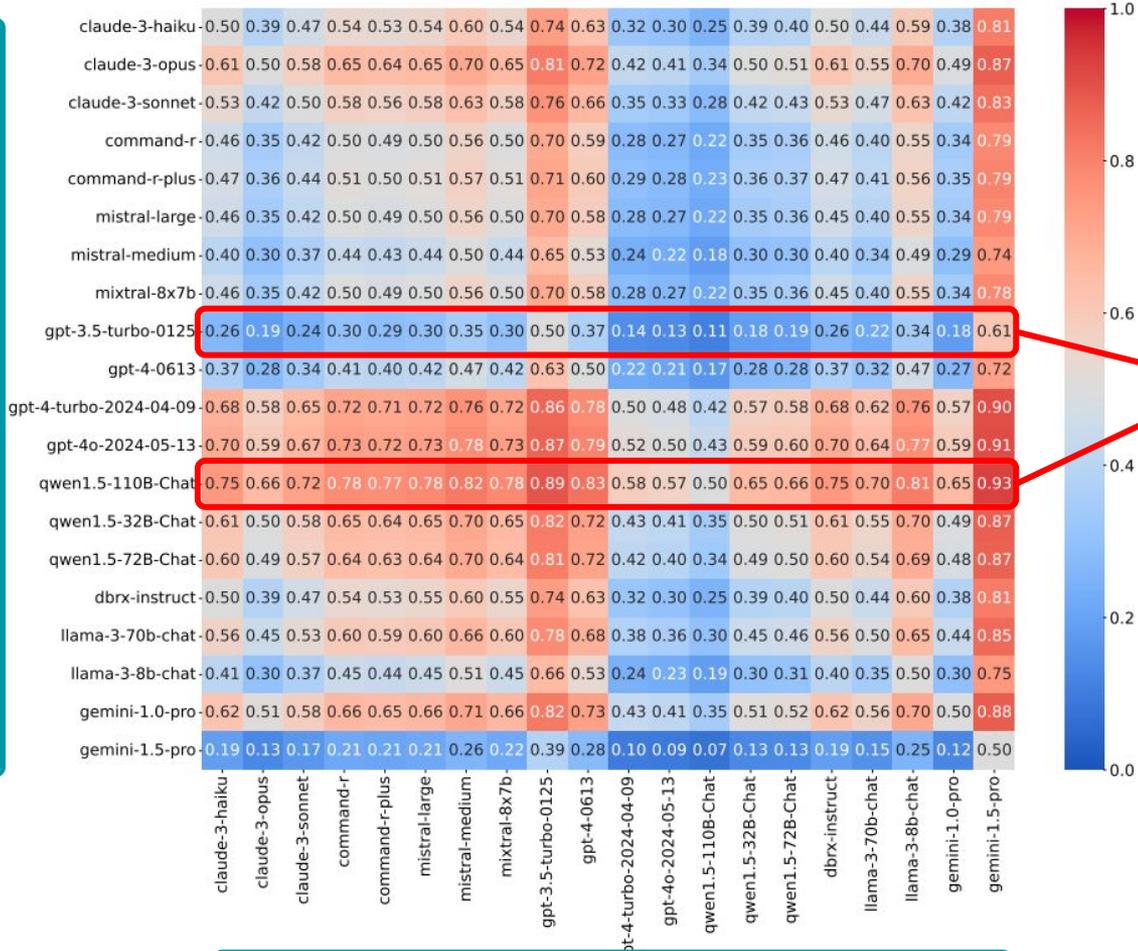
claude-3-haiku	-0.50	0.39	0.47	0.54	0.53	0.54	0.60	0.54	0.74	0.63	0.32	0.30	0.25	0.39	0.40	0.50	0.44	0.59	0.38	0.81
claude-3-opus	-0.61	0.50	0.58	0.65	0.64	0.65	0.70	0.65	0.81	0.72	0.42	0.41	0.34	0.50	0.51	0.61	0.55	0.70	0.49	0.87
claude-3-sonnet	-0.53	0.42	0.50	0.58	0.56	0.58	0.63	0.58	0.76	0.66	0.35	0.33	0.28	0.42	0.43	0.53	0.47	0.63	0.42	0.83
command-r	-0.46	0.35	0.42	0.50	0.49	0.50	0.56	0.50	0.70	0.59	0.28	0.27	0.22	0.35	0.36	0.46	0.40	0.55	0.34	0.79
command-r-plus	-0.47	0.36	0.44	0.51	0.50	0.51	0.57	0.51	0.71	0.60	0.29	0.28	0.23	0.36	0.37	0.47	0.41	0.56	0.35	0.79
mistral-large	-0.46	0.35	0.42	0.50	0.49	0.50	0.56	0.50	0.70	0.58	0.28	0.27	0.22	0.35	0.36	0.45	0.40	0.55	0.34	0.79
mistral-medium	-0.40	0.30	0.37	0.44	0.43	0.44	0.50	0.44	0.65	0.53	0.24	0.22	0.18	0.30	0.30	0.40	0.34	0.49	0.29	0.74
mixtral-8x7b	-0.46	0.35	0.42	0.50	0.49	0.50	0.56	0.50	0.70	0.58	0.28	0.27	0.22	0.35	0.36	0.45	0.40	0.55	0.34	0.78
gpt-3.5-turbo-0125	-0.26	0.19	0.24	0.30	0.29	0.30	0.35	0.30	0.50	0.37	0.14	0.13	0.11	0.18	0.19	0.26	0.22	0.34	0.18	0.61
gpt-4-0613	-0.37	0.28	0.34	0.41	0.40	0.42	0.47	0.42	0.63	0.50	0.22	0.21	0.17	0.28	0.28	0.37	0.32	0.47	0.27	0.72
gpt-4-turbo-2024-04-09	-0.68	0.58	0.65	0.72	0.71	0.72	0.76	0.72	0.86	0.78	0.50	0.48	0.42	0.57	0.58	0.68	0.62	0.76	0.57	0.90
gpt-4o-2024-05-13	-0.70	0.59	0.67	0.73	0.72	0.73	0.78	0.73	0.87	0.79	0.52	0.50	0.43	0.59	0.60	0.70	0.64	0.77	0.59	0.91
qwen1.5-110B-Chat	-0.75	0.66	0.72	0.78	0.77	0.78	0.82	0.78	0.89	0.83	0.58	0.57	0.50	0.65	0.66	0.75	0.70	0.81	0.65	0.93
qwen1.5-32B-Chat	-0.61	0.50	0.58	0.65	0.64	0.65	0.70	0.65	0.82	0.72	0.43	0.41	0.35	0.50	0.51	0.61	0.55	0.70	0.49	0.87
qwen1.5-72B-Chat	-0.60	0.49	0.57	0.64	0.63	0.64	0.70	0.64	0.81	0.72	0.42	0.40	0.34	0.49	0.50	0.60	0.54	0.69	0.48	0.87
dbrx-instruct	-0.50	0.39	0.47	0.54	0.53	0.55	0.60	0.55	0.74	0.63	0.32	0.30	0.25	0.39	0.40	0.50	0.44	0.60	0.38	0.81
llama-3-70b-chat	-0.56	0.45	0.53	0.60	0.59	0.60	0.66	0.60	0.78	0.68	0.38	0.36	0.30	0.45	0.46	0.56	0.50	0.65	0.44	0.85
llama-3-8b-chat	-0.41	0.30	0.37	0.45	0.44	0.45	0.51	0.45	0.66	0.53	0.24	0.23	0.19	0.30	0.31	0.40	0.35	0.50	0.30	0.75
gemini-1.0-pro	-0.62	0.51	0.58	0.66	0.65	0.66	0.71	0.66	0.82	0.73	0.43	0.41	0.35	0.51	0.52	0.62	0.56	0.70	0.50	0.88
gemini-1.5-pro	-0.19	0.13	0.17	0.21	0.21	0.21	0.26	0.22	0.39	0.28	0.10	0.09	0.07	0.13	0.13	0.19	0.15	0.25	0.12	0.50



Respondent vs. Respondent (win rates)

Respondents

Respondents



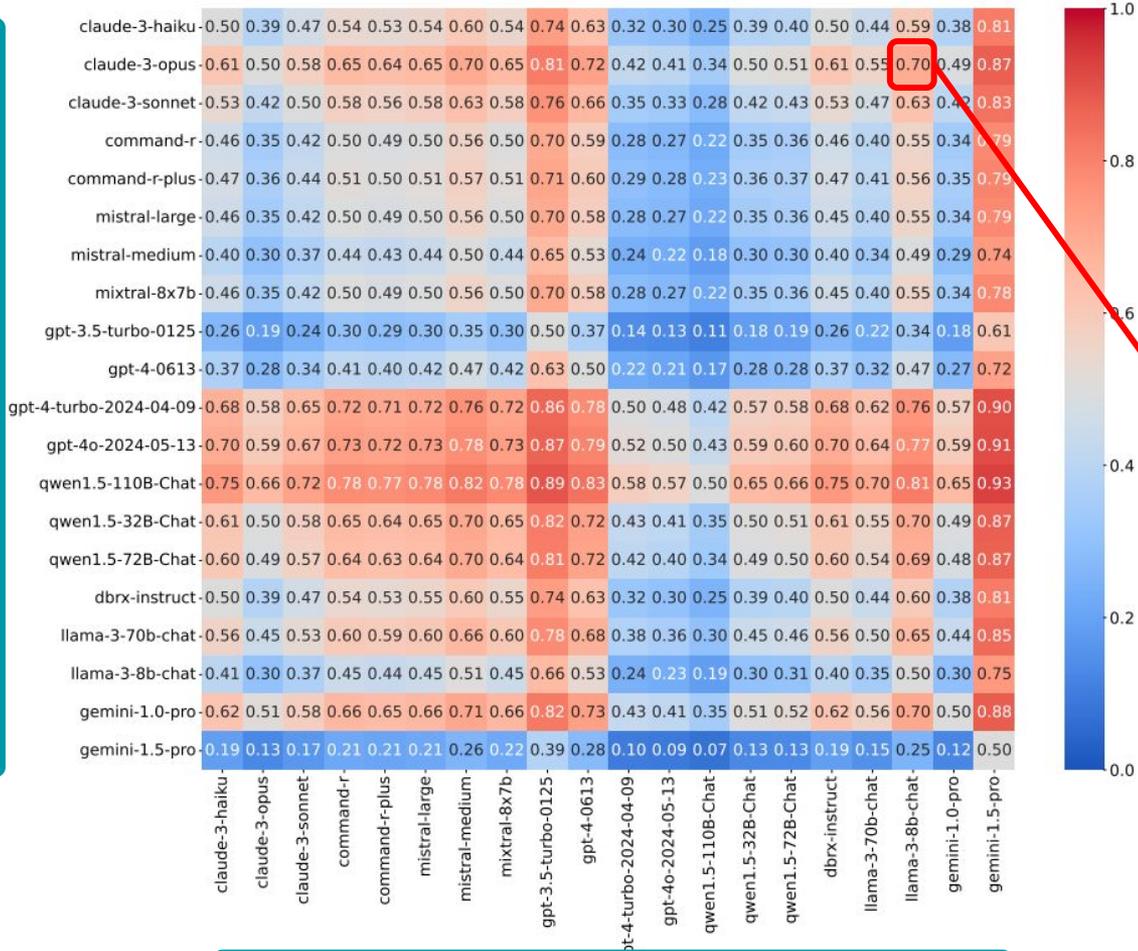
Respondent vs. Respondent (win rates)

Insights

strong red/blue bands indicates consensus winners/losers

Respondents

Respondents



Respondent vs. Respondent (win rates)

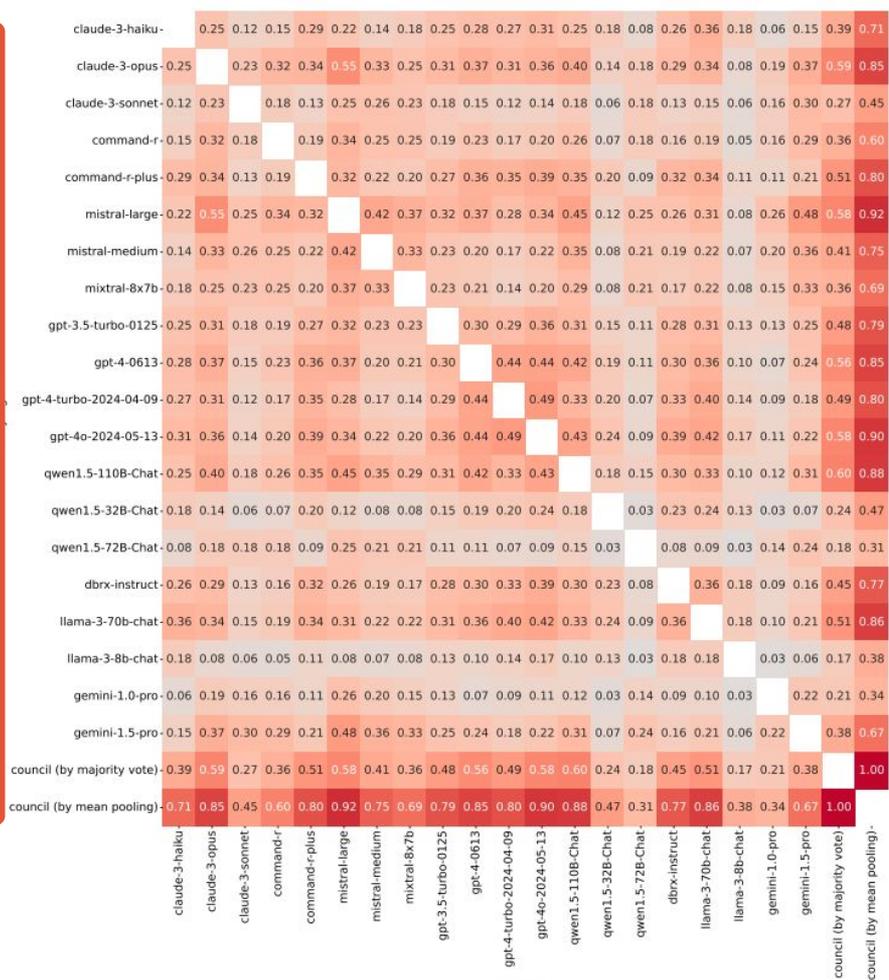
Insights

strong red/blue bands indicates consensus winners/losers

claude opus wins against llama 8b 70% of the time

Respondents

Judges

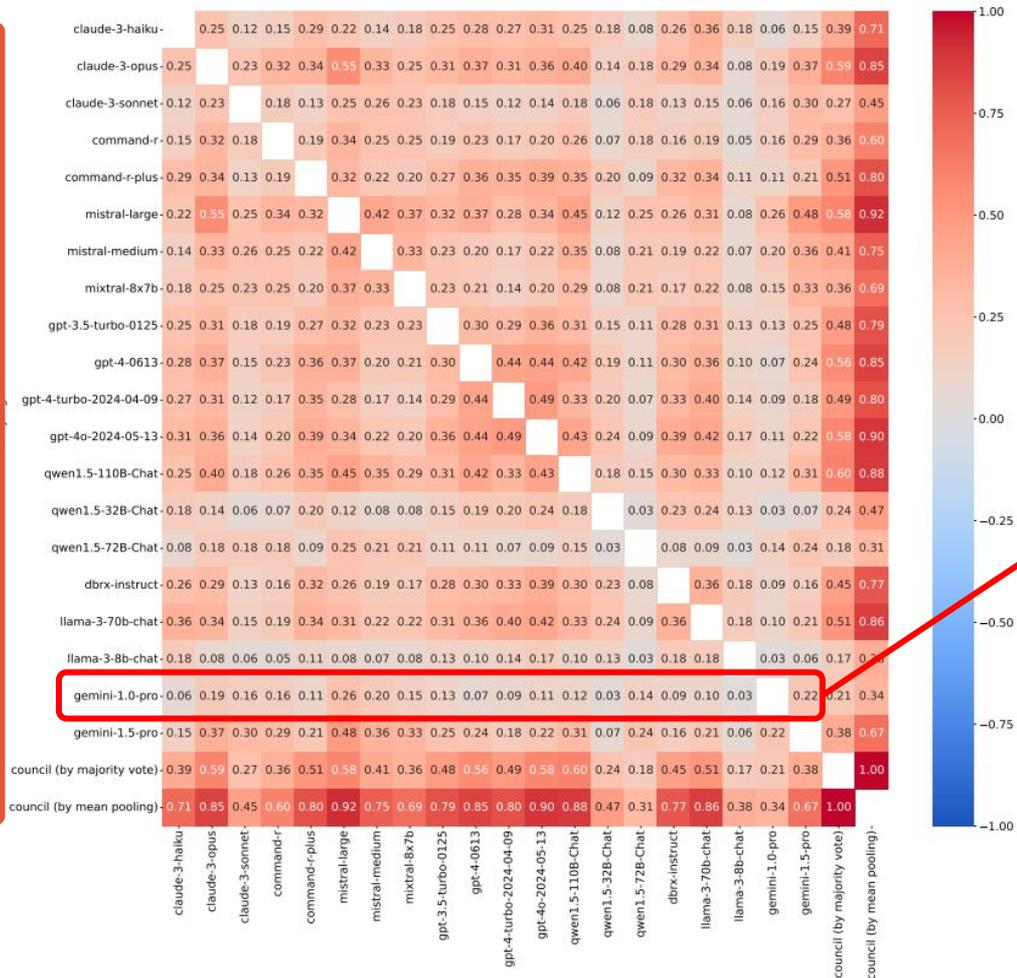


Judge vs. Judge (agreement)

Insights

Judges

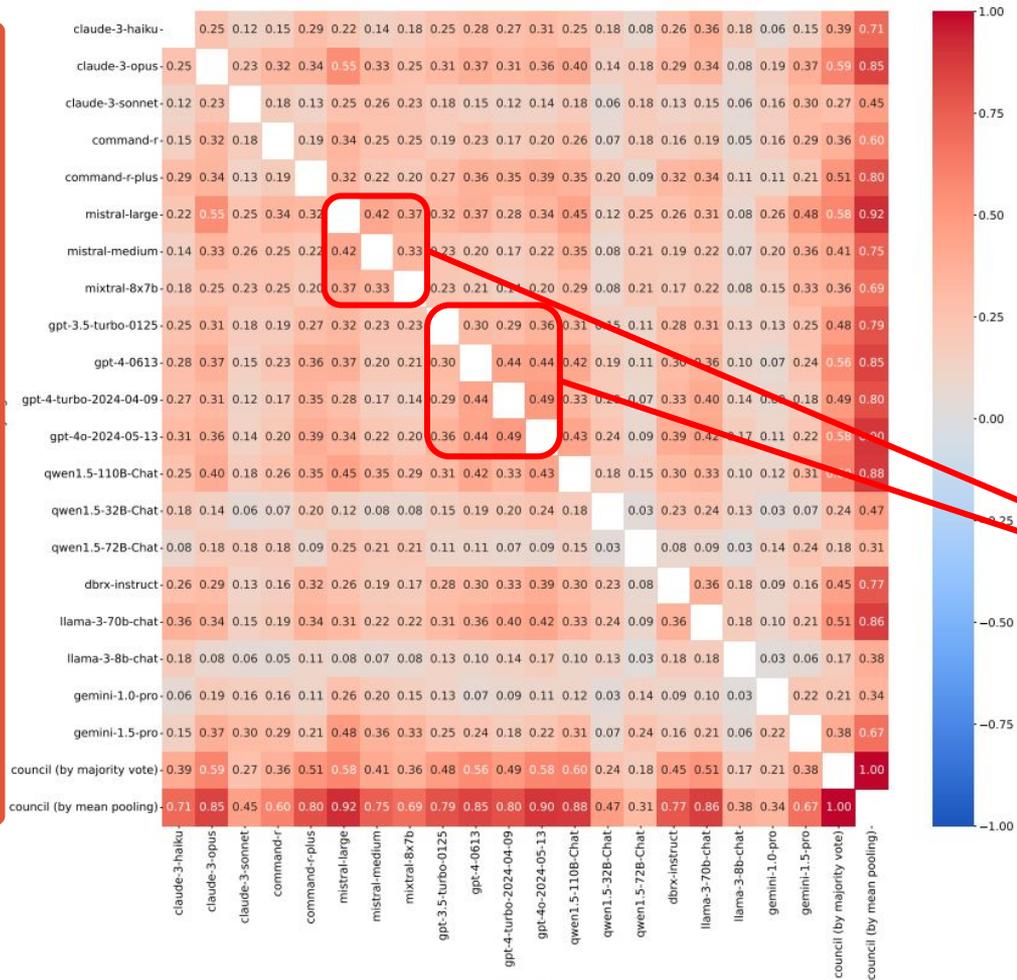
Judges



Judge vs. Judge (agreement)

gemini-1.0 agrees with mistral-large the most and qwen-32B the least

Judges



Judges

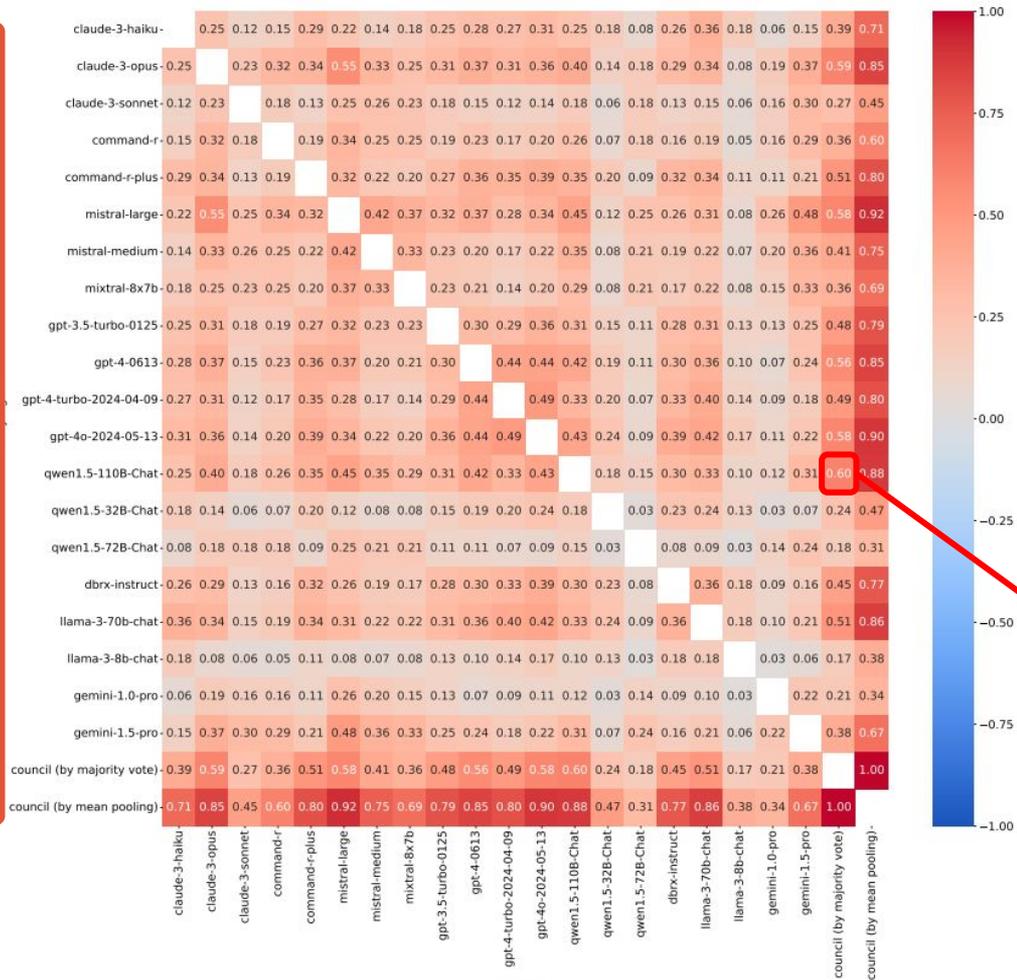
Judge vs. Judge (agreement)

Insights

gemini-1.0 agrees with mistral-large the most and qwen-32B the least

openai and mistral have the strongest inter-family agreement

Judges



Judge vs. Judge (agreement)

Insights

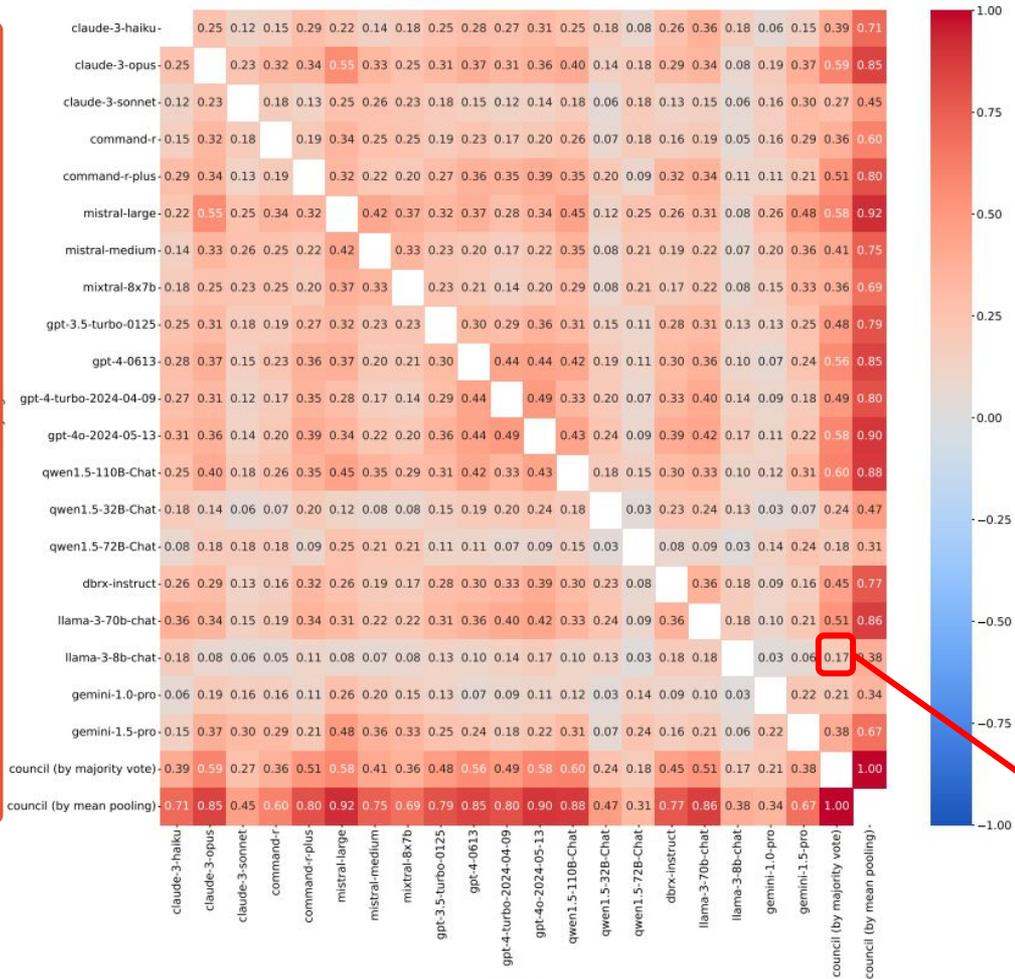
gemini-1.0 agrees with mistral-large the most and qwen-32B the least

openai and mistral have the strongest inter-family agreement

qwen-110B is the most **representative** of the majority opinion

Judges

Judges



Judges

Judge vs. Judge (agreement)

Insights

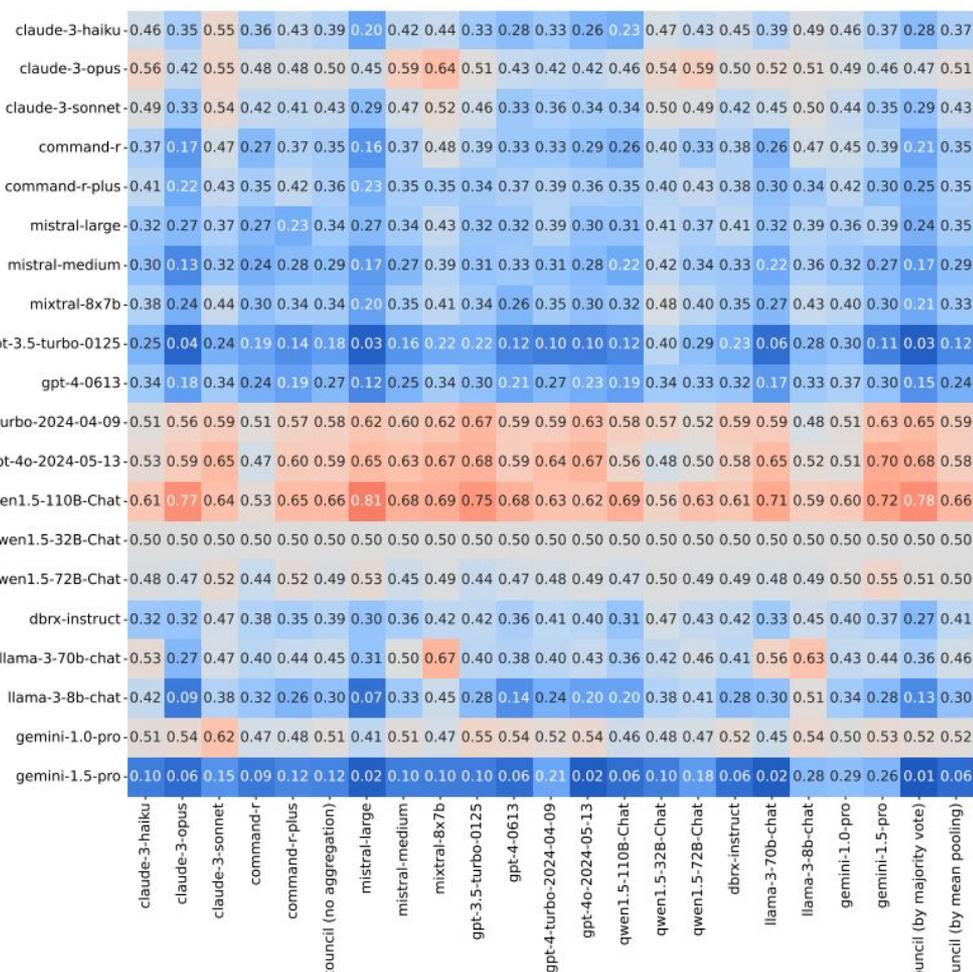
gemini-1.0 agrees with mistral-large the most and qwen-32B the least

openai and mistral have the strongest inter-family agreement

qwen-110B is the most **representative** of the majority opinion

llama-8B is the most **contrarian** judge

Respondents



Judges

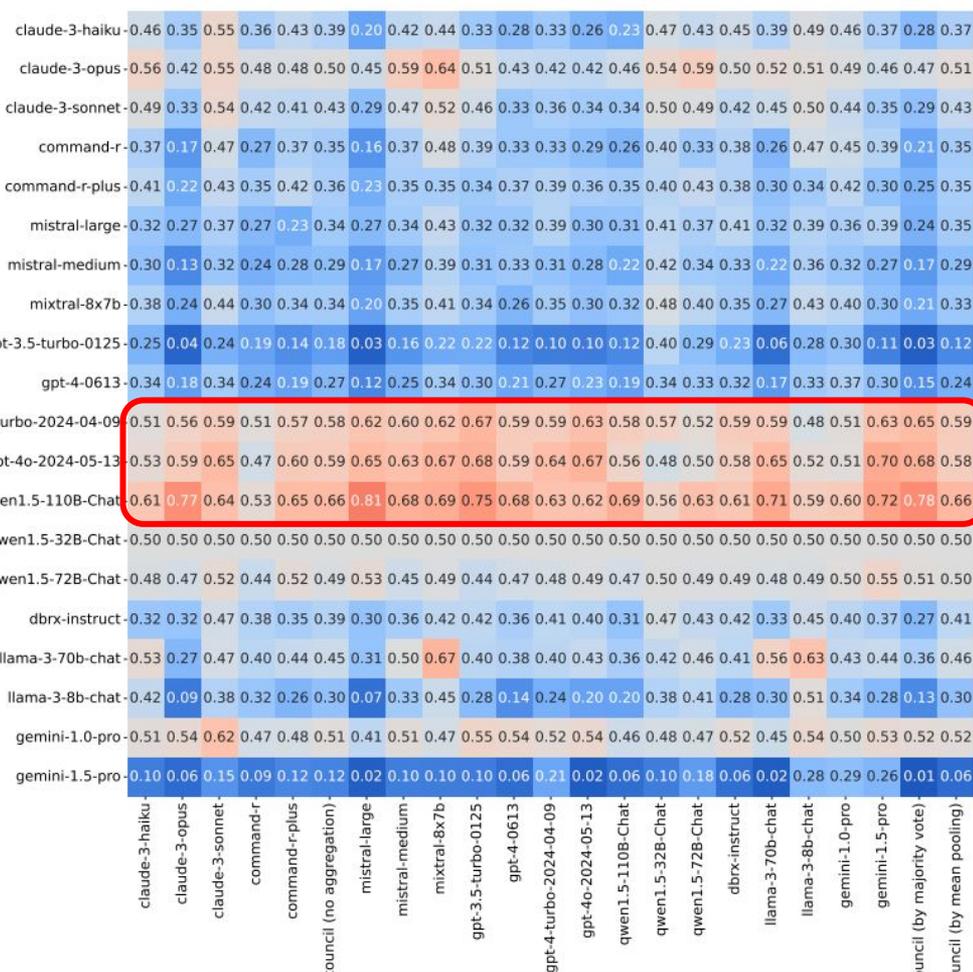
Judge vs. Respondent (affinities)



Insights

Area reserved for insights, currently blank.

Respondents



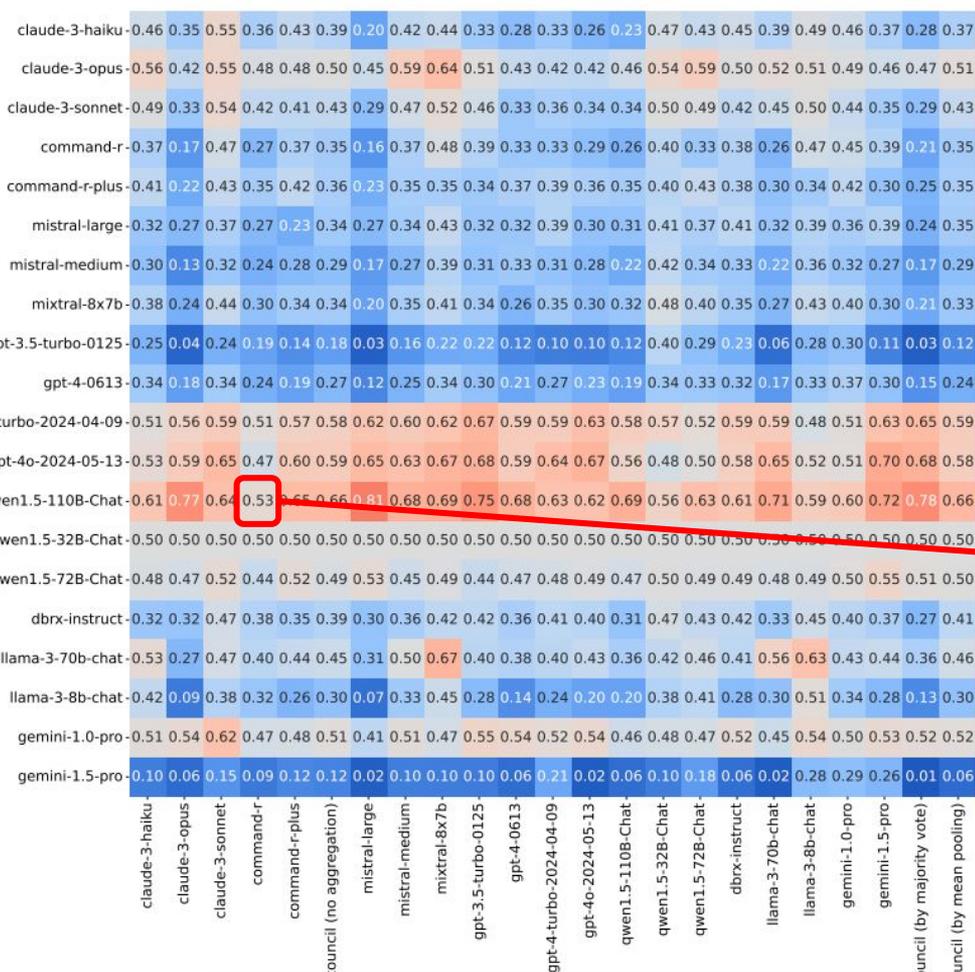
Judges

Judge vs. Respondent (affinities)

Insights

most council members genuinely liked Qwen-110B across the board.

Respondents



Judges

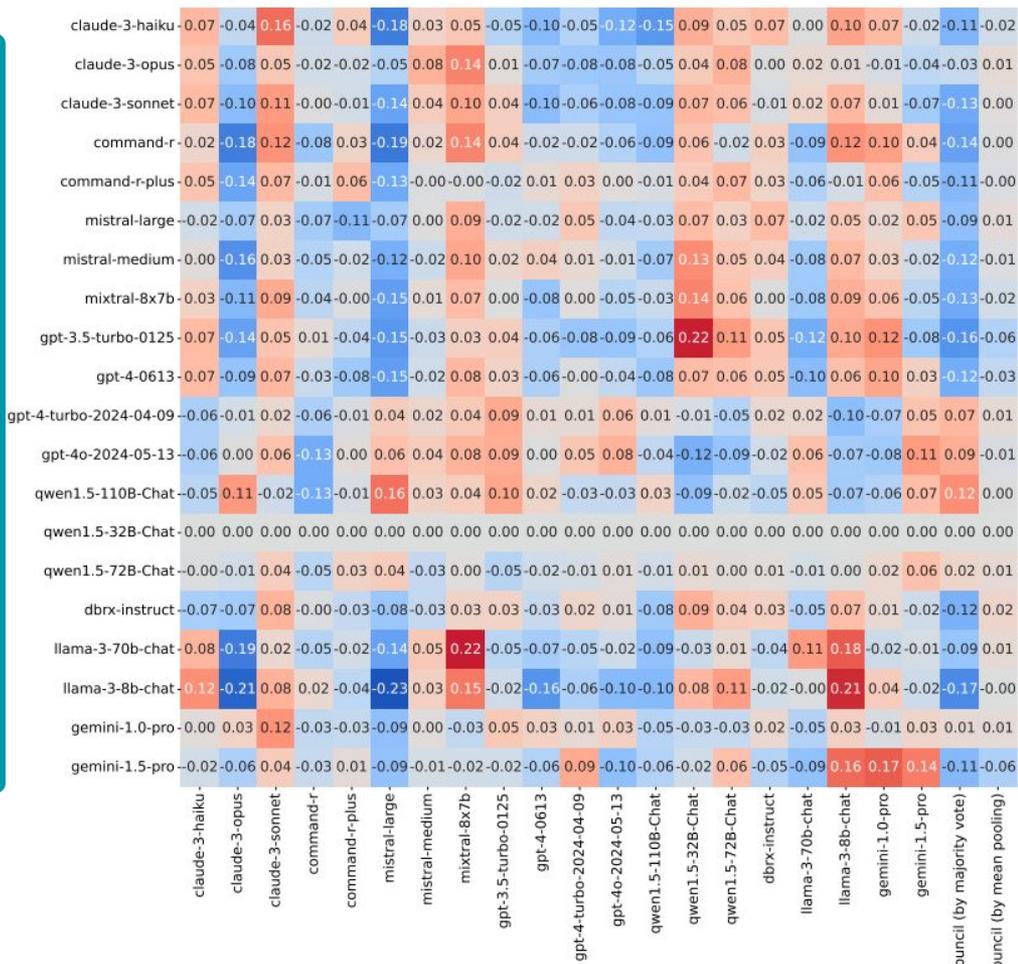
Judge vs. Respondent (affinities)

Insights

most council members genuinely liked Qwen-110B across the board.

command-r is the least favorable, but it still gives it a positive win rate.

Respondents

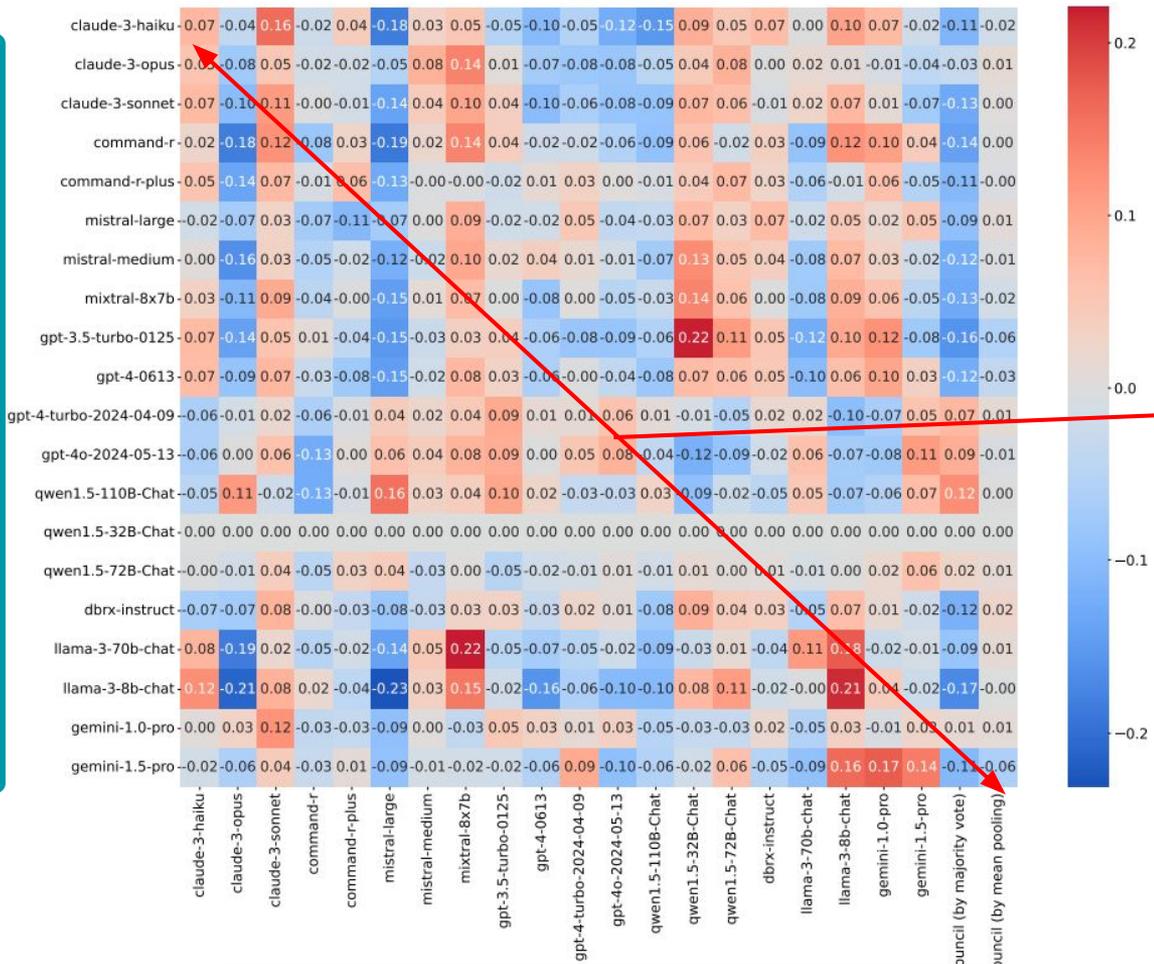


Judges

Judge vs. Respondent (Council-Normalized) (affinities)

💡 Insights

Respondents



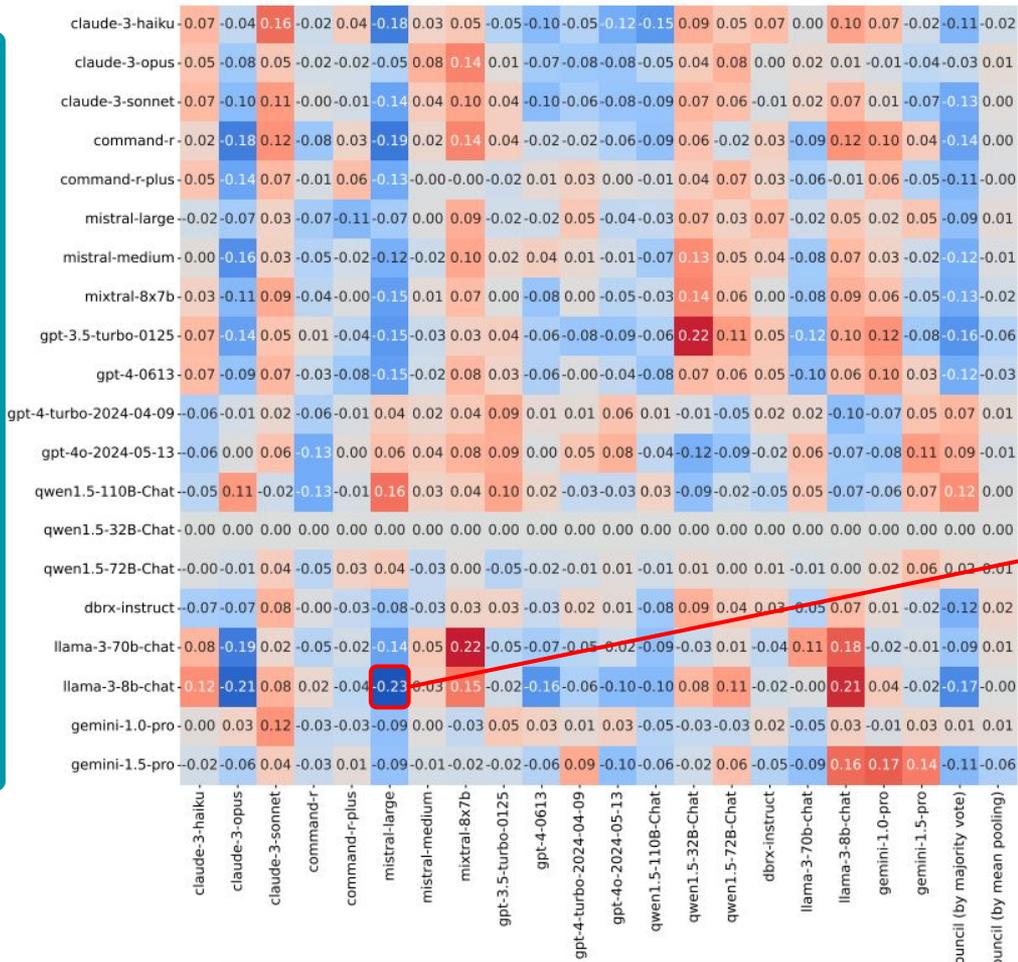
Judge vs. Respondent (Council-Normalized) (affinities)

Insights

self-enhancement bias, measured.

Judges

Respondents



Judges

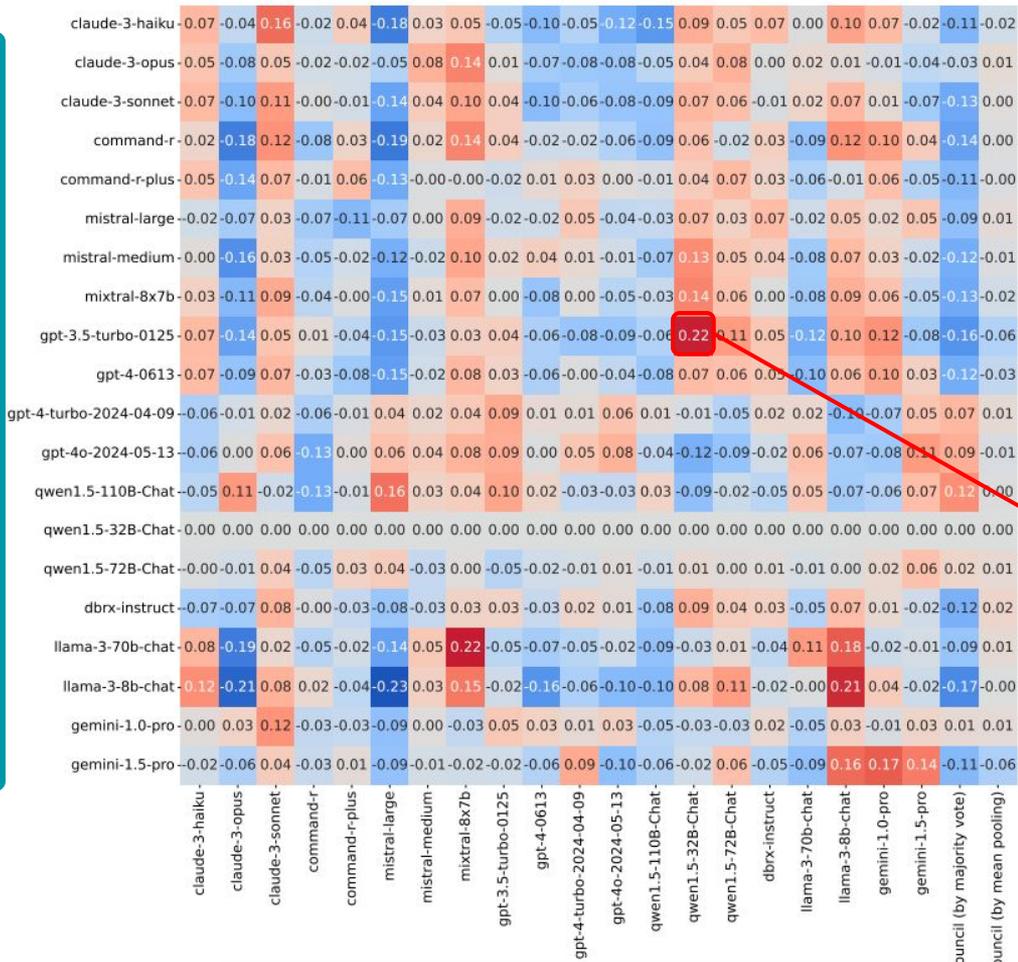
Judge vs. Respondent (Council-Normalized) (affinities)

Insights

self-enhancement bias, measured.

mistral-large hates llama-3-8b

Respondents



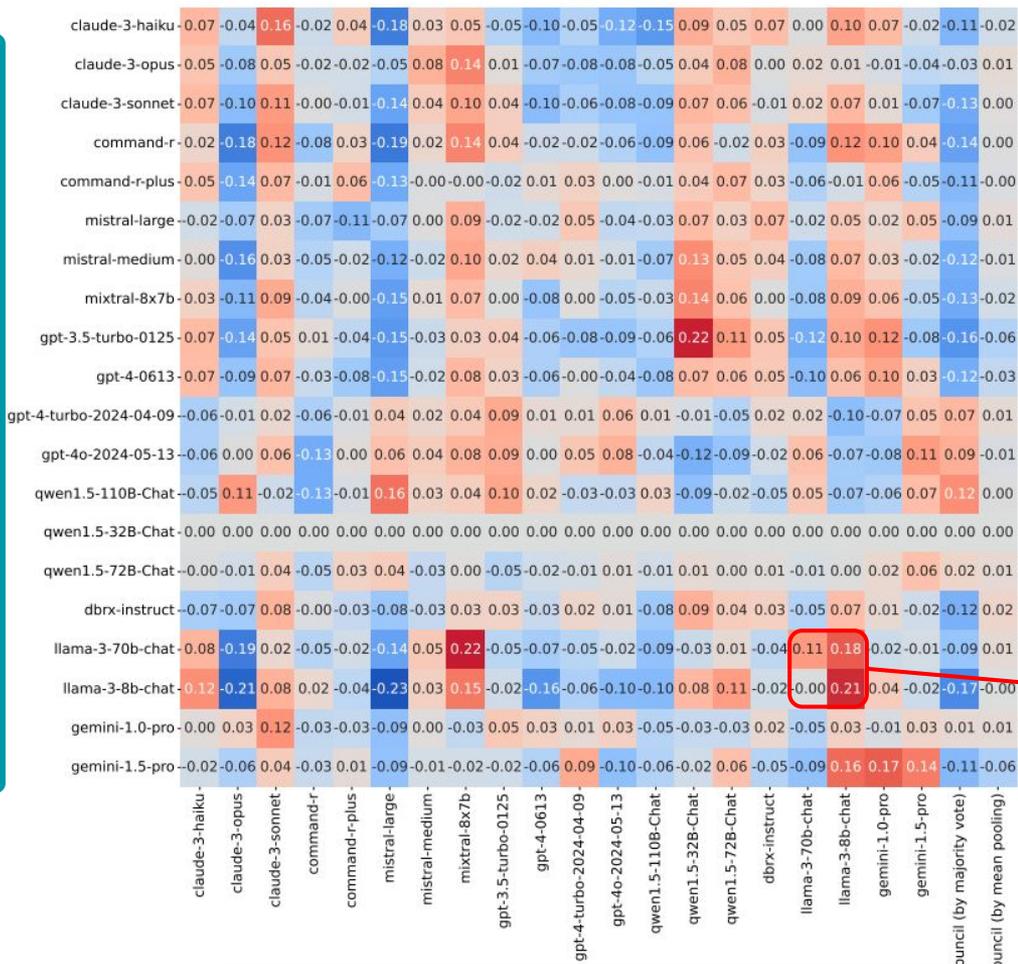
Judges

Judge vs. Respondent (Council-Normalized) (affinities)

Insights

- self-enhancement bias, measured.
- mistral-large hates llama-3-8b
- qwen 32B loves gpt-3.5

Respondents



Judges

Judge vs. Respondent (Council-Normalized)

Insights

self-enhancement bias, measured.

mistral-large hates llama-3-8b

qwen 32B loves gpt-3.5

The llama family loves itself

Head-to-head Win Rates

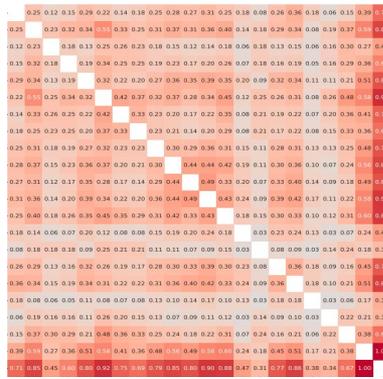
Respondents



Respondents

Inter-Judge Agreement

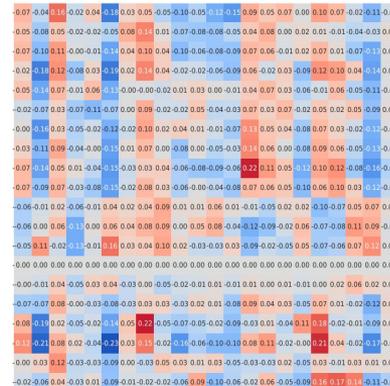
Judges



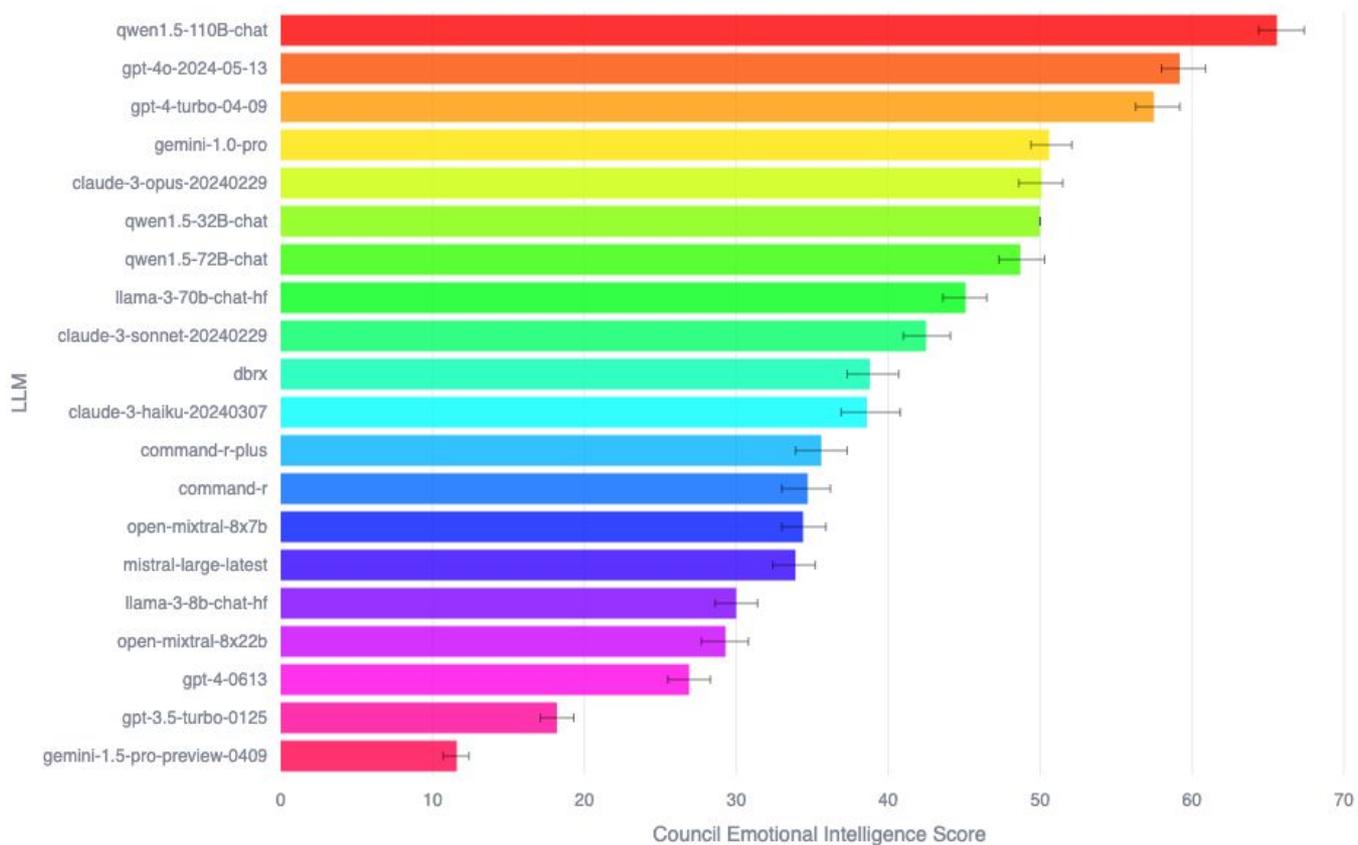
Judges

Normalized Affinities

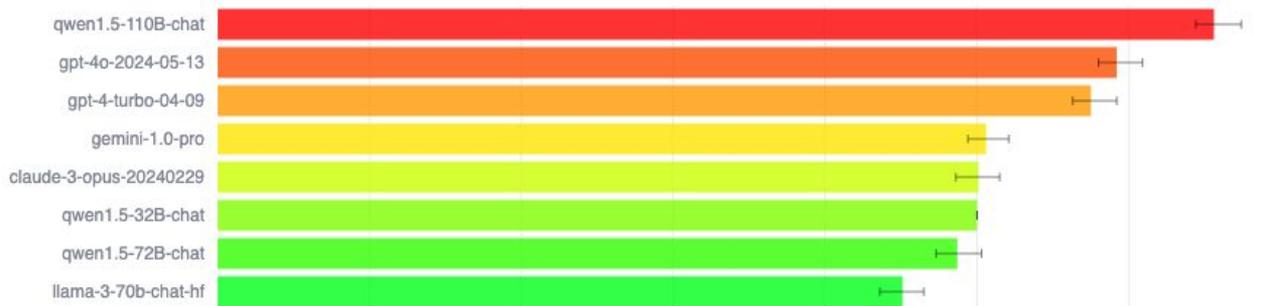
Respondents



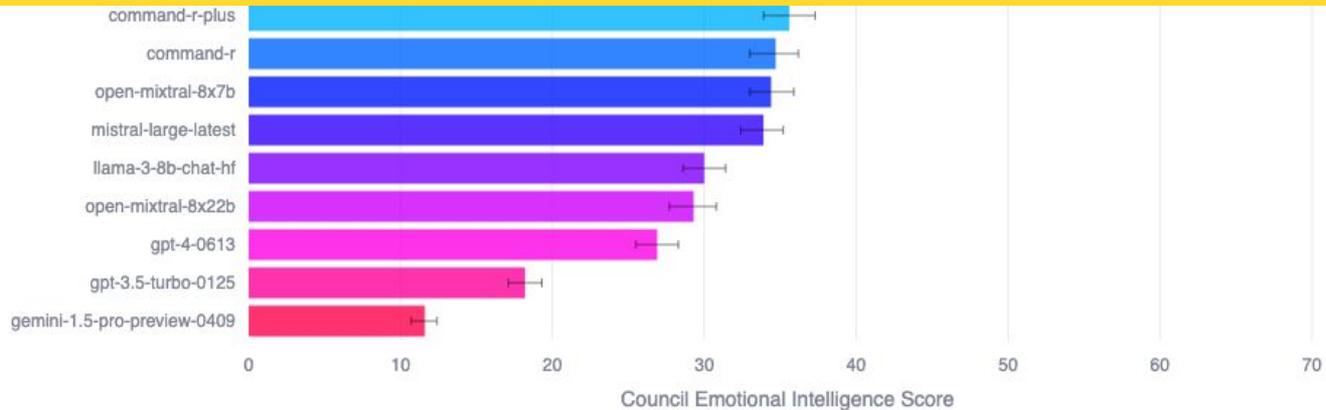
Emotional Intelligence Case Study: Final Leaderboard



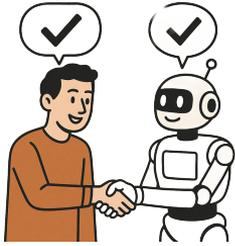
Emotional Intelligence Case Study: Final Leaderboard



How do you know if a leaderboard is good?

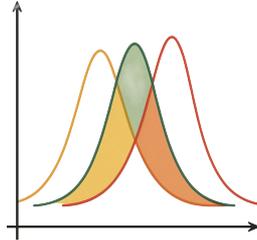


How do you know if a leaderboard is good?



Human agreement

Alignment with meaningful human judgments.



Statistical significance

Stable rankings, not explained by random noise.



Cost and efficiency

Reasonably quick and **not** cost-prohibitive.



Robustness

Resilient to **cheating**.

Good leaderboards?

human agreement



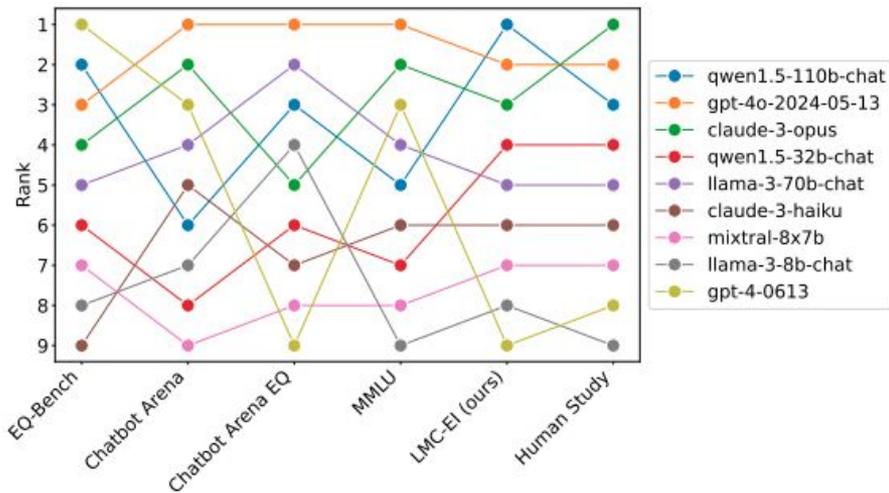
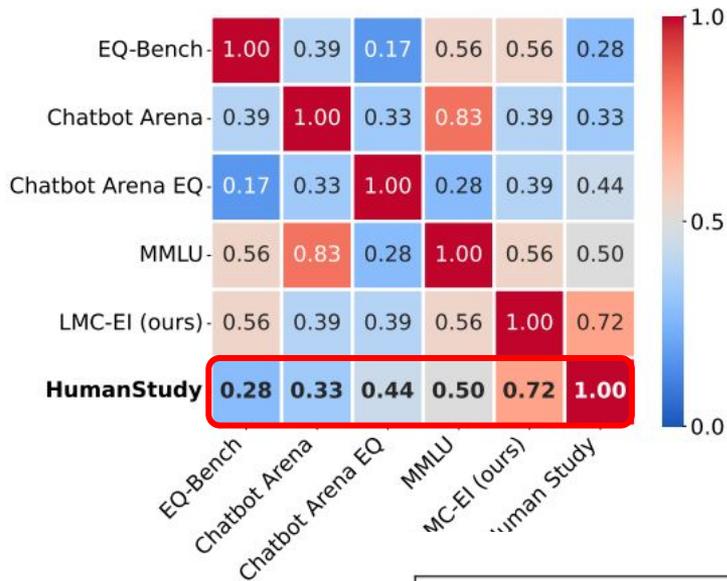
statistical significance



cost and efficiency



robustness to cheating

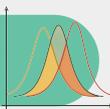


Good leaderboards?

human agreement



statistical significance



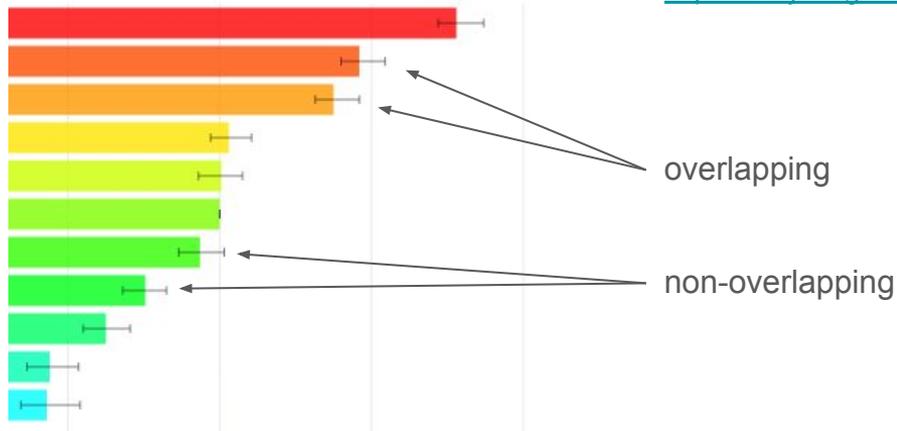
cost and efficiency



robustness to cheating

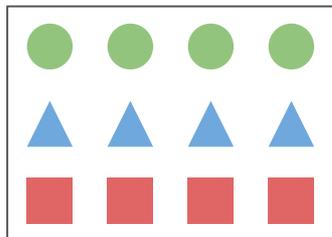


<https://lmsys.org/blog/2024-04-19-arena-hard/>

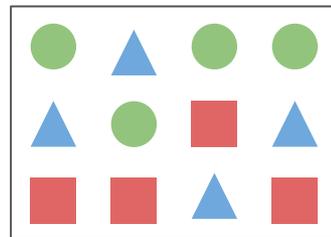


Separability: percentage of model pairs which have non-overlapping confidence intervals of the benchmark scores.

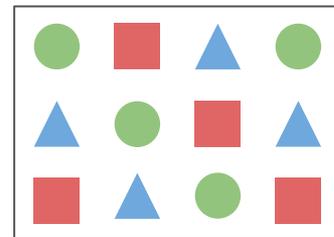
merv = 0



merv = 1



merv = 2



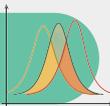
Stability / Consistency: Expected ordinal swing of the average respondent's rank in a new bootstrap trial (MERV).

Good leaderboards?

human agreement



statistical significance



cost and efficiency

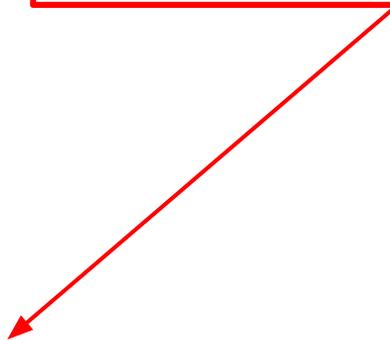


robustness to cheating



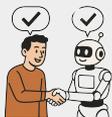
LLM	Separability
qwen1.5-110B-Chat	62.1%
gpt-4o-2024-05-13	60.5%
gpt-4-turbo-2024-04-09	57.9%
gemini-1.0-pro	30.5%
claude-3-opus	72.6%
qwen1.5-32B-Chat	25.3%
qwen1.5-72B-Chat	37.9%
llama-3-70b-chat	64.2%
claude-3-sonnet	52.1%
dbrx-instruct	50.5%
claude-3-haiku	45.3%
command-r-plus	61.1%
command-r	45.8%
mixtral-8x7b	56.8%
mistral-large	73.7%
llama-3-8b-chat	31.1%
mistral-medium	57.9%
gpt-4-0613	64.7%
gpt-3.5-turbo-0125	55.8%
gemini-1.5-pro	60.0%
Average Judge	53.3%
LMC (majority vote)	73.7%
LMC (mean pooling)	74.7%
LMC (no aggregation)	90.5%

The Council's rankings are more separable than any individual judge.

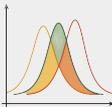


Good leaderboards?

human agreement



statistical significance



cost and efficiency



robustness to cheating



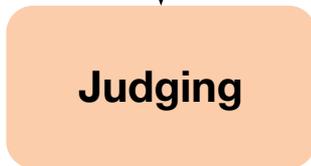
20 council members
* 5 dilemmas each

100 dilemmas



100 dilemmas
* 20 council members

2000 responses



(2000 - 100)
* 20 council judges
* 2 position swap

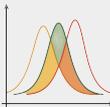
76000 judgments

Good leaderboards?

human agreement



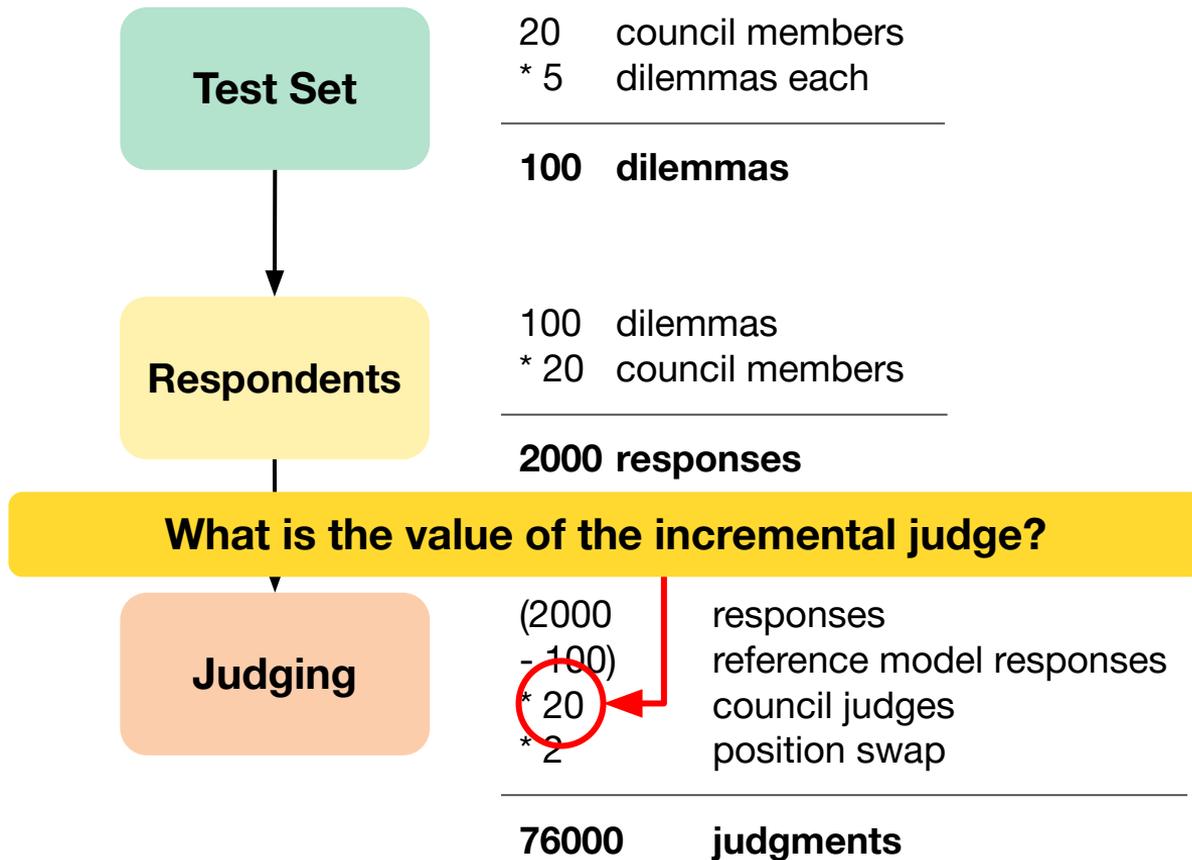
statistical significance



cost and efficiency

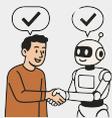


robustness to cheating

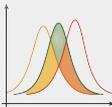


Good leaderboards?

human agreement



statistical significance



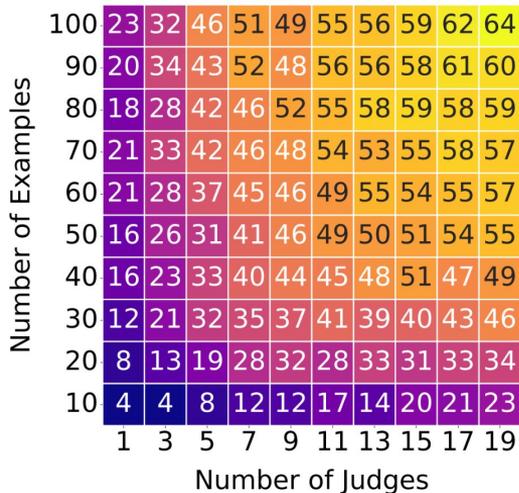
cost and efficiency



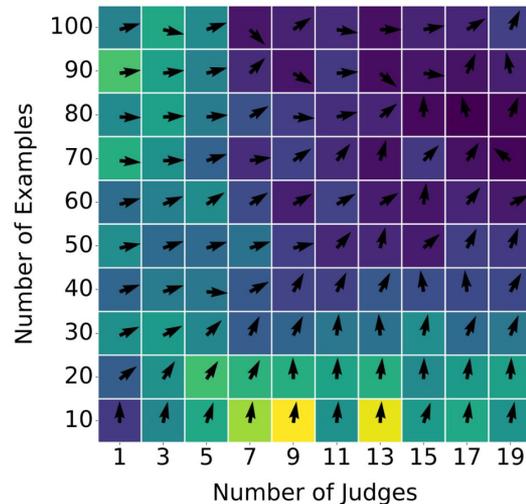
robustness to cheating



Monte carlo simulations of hypothetical councils



(c) Separability μ



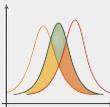
(d) Separability μ gradients

Good leaderboards?

human agreement



statistical significance



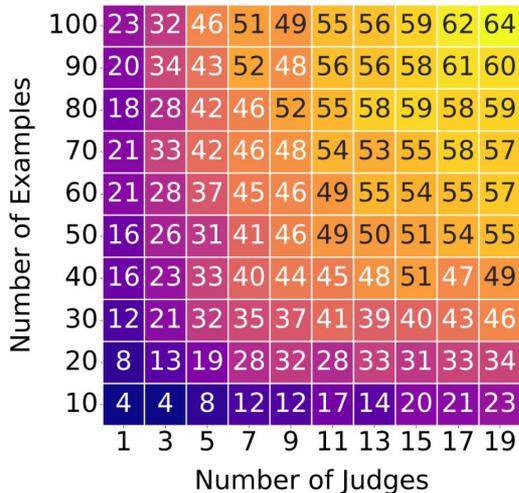
cost and efficiency



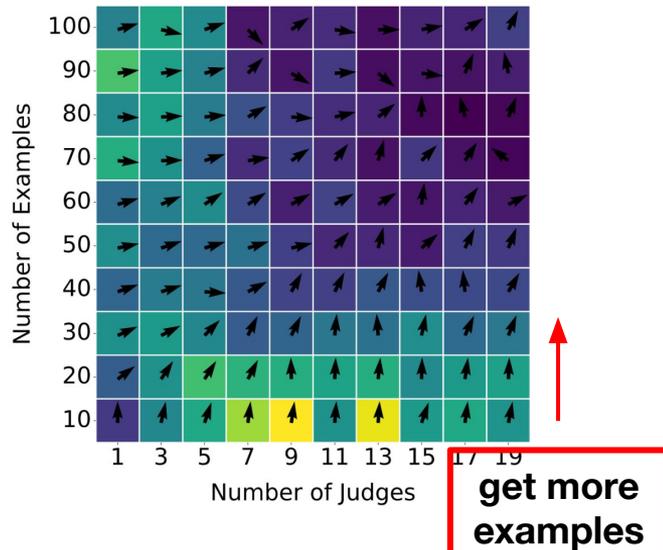
robustness to cheating



Monte carlo simulations of hypothetical councils



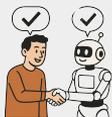
(c) Separability μ



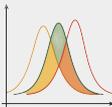
(d) Separability μ gradients

Good leaderboards?

human agreement



statistical significance



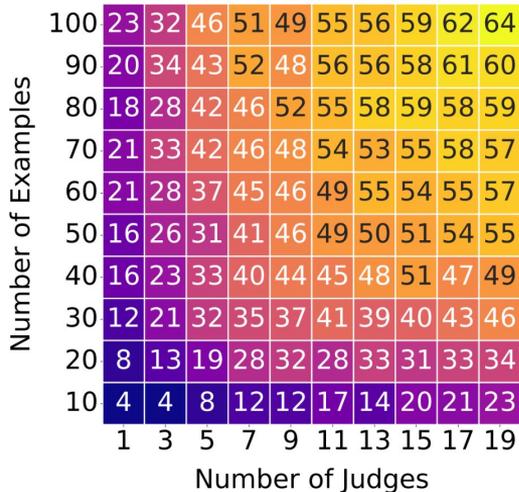
cost and efficiency



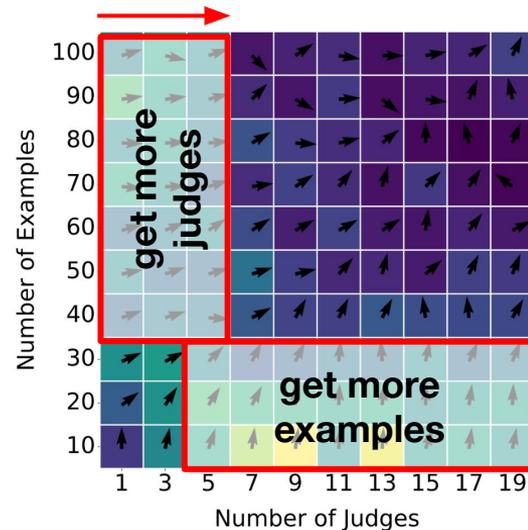
robustness to cheating



Monte carlo simulations of hypothetical councils



(c) Separability μ



(d) Separability μ gradients

Good leaderboards?

human agreement



statistical significance



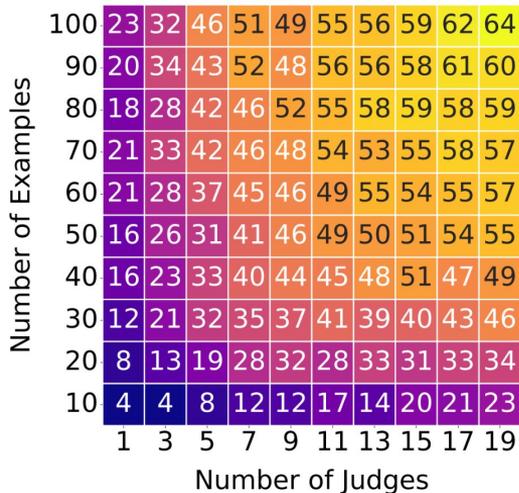
cost and efficiency



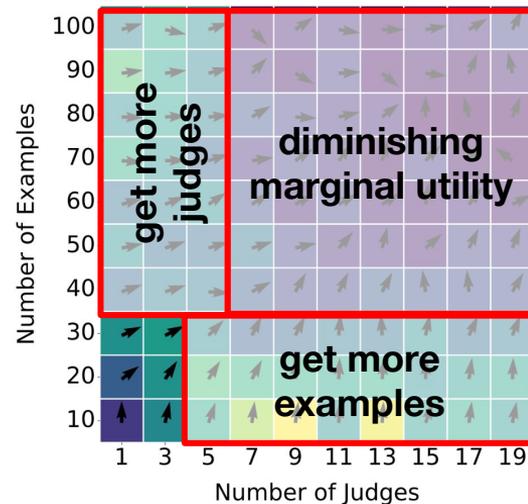
robustness to cheating



Monte carlo simulations of hypothetical councils



(c) Separability μ



(d) Separability μ gradients

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human agreement



statistical significance



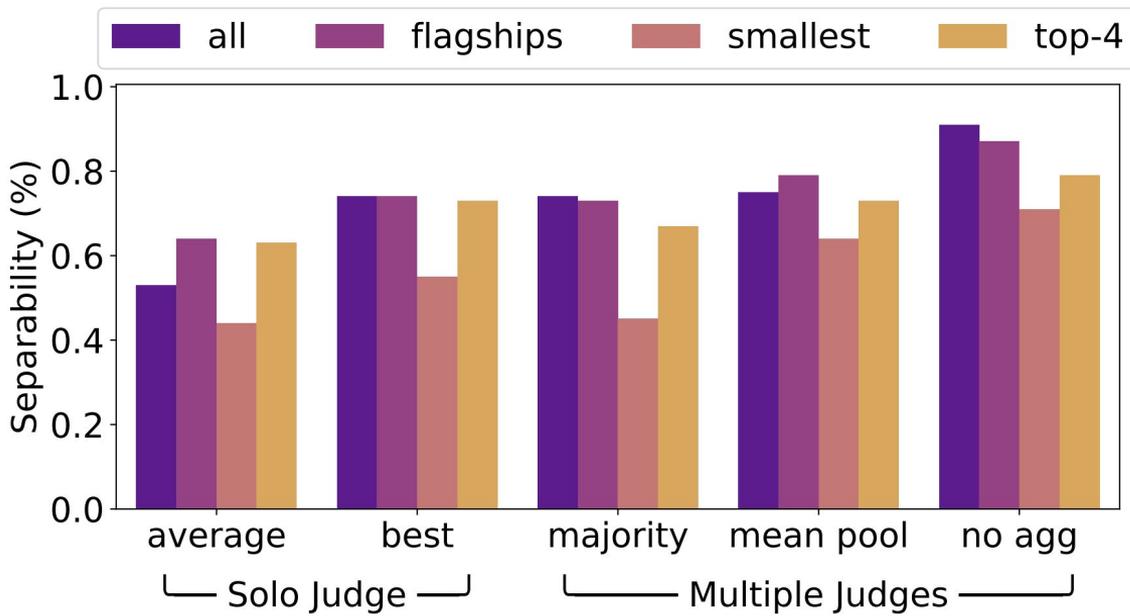
cost and efficiency



robustness to cheating



From oligarchical councils to representative democracies

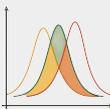


Good leaderboards?

human agreement



statistical significance



cost and efficiency



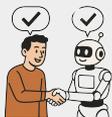
robustness to cheating



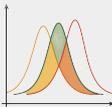
What is the effect of adversarial judges?

Good leaderboards?

human agreement



statistical significance



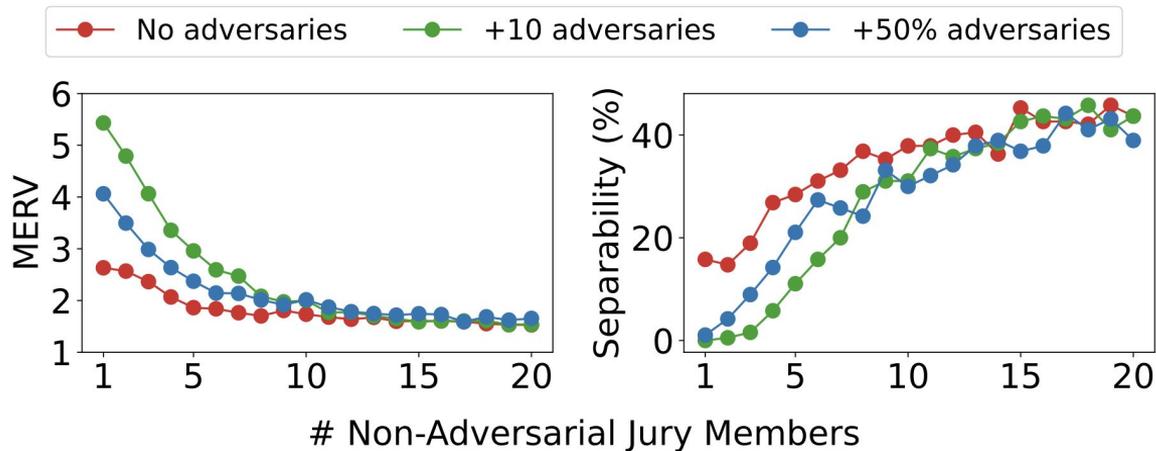
cost and efficiency



robustness to cheating

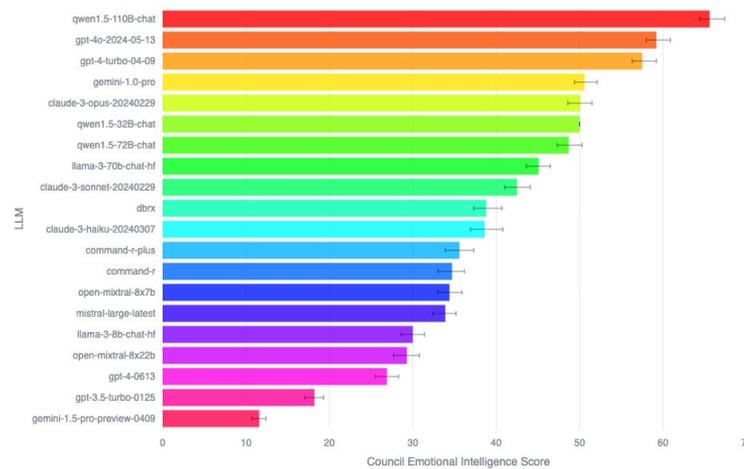


Larger councils are more resilient to **adversaries**.



Using a bigger ensemble helps **automatically regularize** corrupt judges.

Can LLMs decide amongst themselves who is the best?



Yes, they can! *

```
# pip install llm_council
from llm_council import Council

# Initialize a council.
council = Council(
    "gpt-4.1",
    "claude-sonnet-3.7",
    "gemini-2.5-flash-001",
)

# Run the council.
completions_df = council.execute(prompt=prompt)
judgments_df = council.judge(completions_df)

# Analyze and visualize.
council.analyze()

# Upload to HF datasets.
council.upload_to_hf("<hf_username>", "<dataset_name>")
```



llm-council.com

 justinxzhao

 justin-zhao

Thank you!