NYT-Connections

A Deceptively Simple Text Classification Task That Stumps System-1 Thinkers

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Connections

FOLD	GAUGE	STANDARD	YARDSTICK
MARY	NORMAL	DRY	BENCHMARK
COMBINATION	CHECK	CALL	MASS
KENT	BET	OILY	WASH

Connections

WASH
DRY
FOLD

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Connections

WASH

DRY

FOLD

	GAUGE	STANDARD	YARDSTICK
MARY	NORMAL		BENCHMARK
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Connections

Benchmark	Poker Actions	Skin Types	Starts of U.S States
STANDARD	FOLD	DRY	WASH
YARDSTICK	CHECK	NORMAL	MASS
BENCHMARK	CALL	OILY	MARY
GAUGE	BET	COMBINATION	KENT

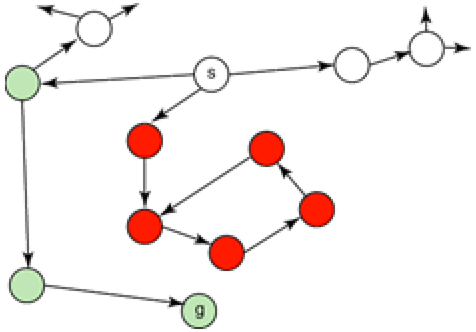
NYT-Connections

- Consists of **554** puzzles designed to **penalize System 1 thinking.**
- Isolated to **text classification** – evaluates **shortcut learning.**
- Updated monthly, providing **novel puzzles.**

Methodology

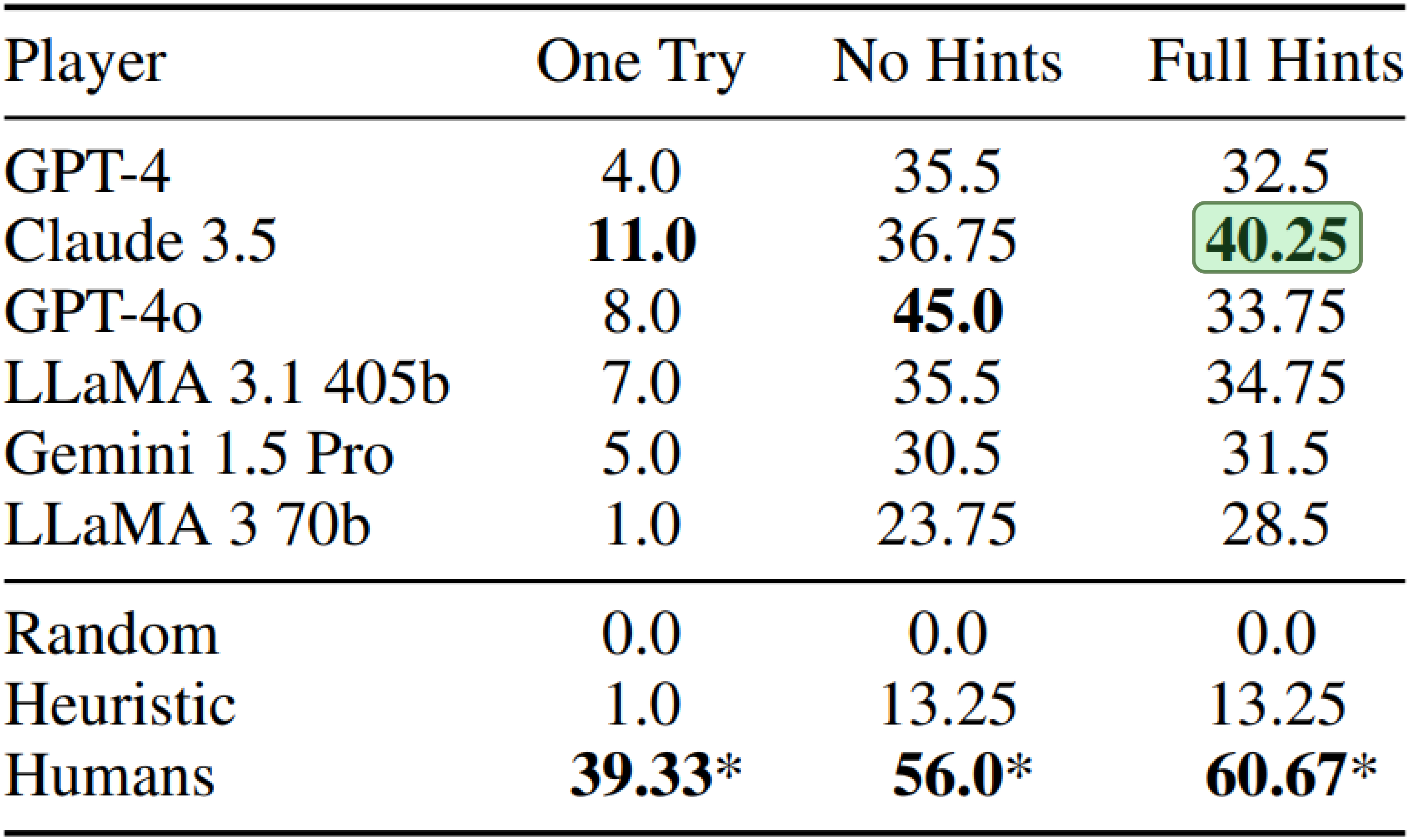
Claude 3.5 Sonnet
GPT-4
GPT-4o
Gemini 1.5 Pro
Llama 3 70B
Llama 3.1 405B

Human Evaluators



Heuristic Random Guess

Do LLMs Perform Like Humans?



Player	One Try	No Hints	Full Hints
GPT-4	4.0	35.5	32.5
Claude 3.5	**11.0**	36.75	**40.25**
GPT-4o	8.0	**45.0**	33.75
LLaMA 3.1 405b	7.0	35.5	34.75
Gemini 1.5 Pro	5.0	30.5	31.5
LLaMA 3 70b	1.0	23.75	28.5
Random	0.0	0.0	0.0
Heuristic	1.0	13.25	13.25
Humans	**39.33***	**56.0***	**60.67***

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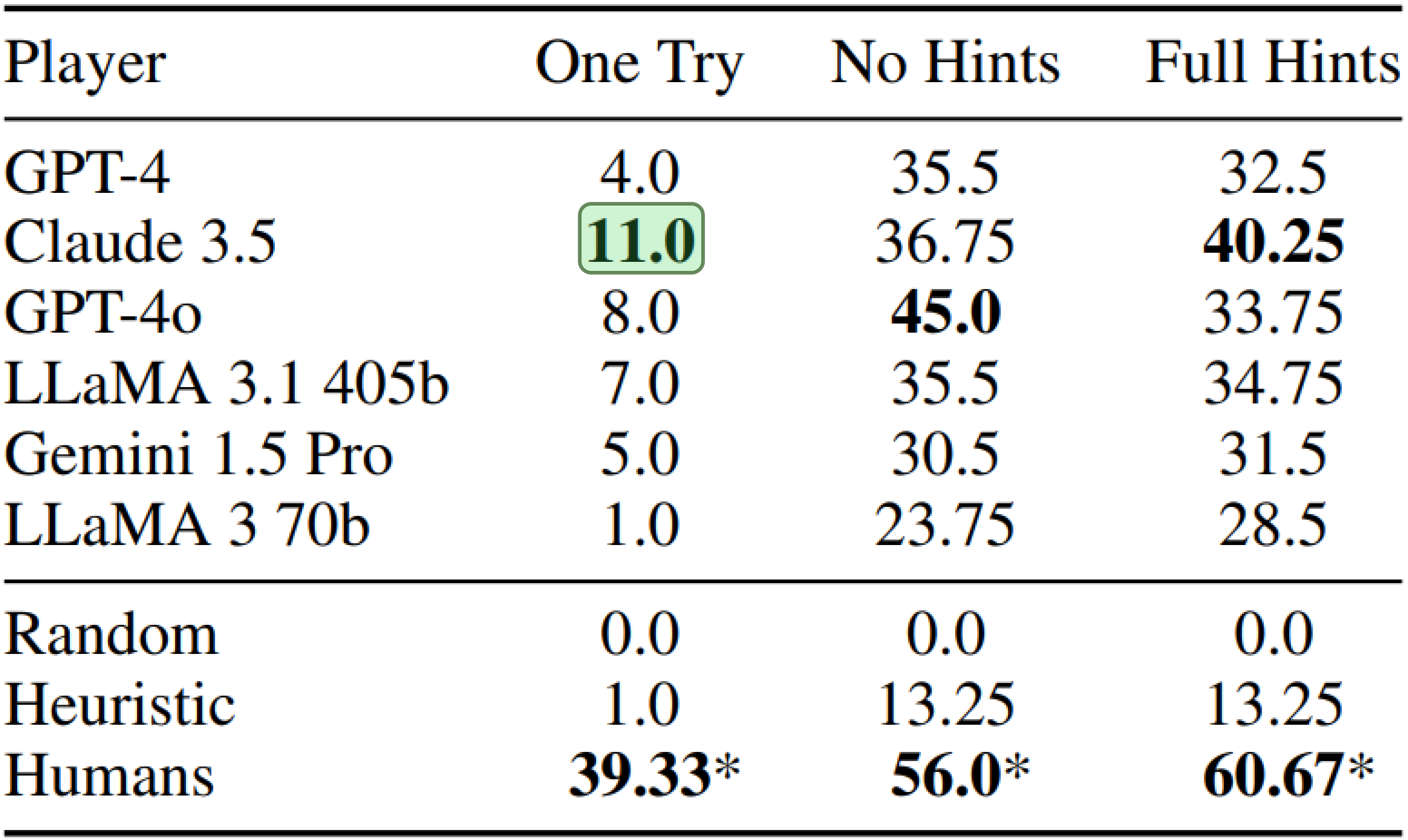

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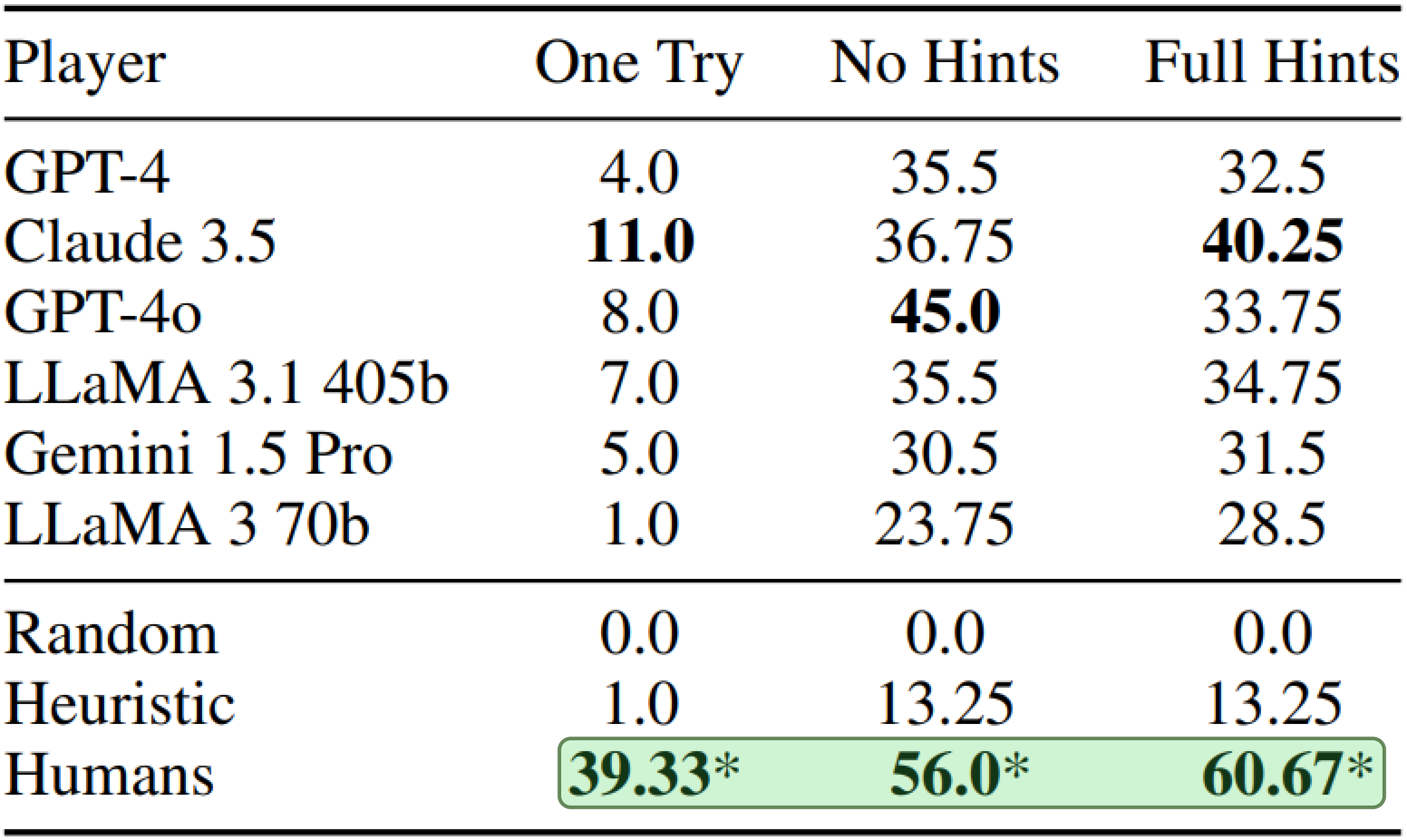

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Conclusion

- *NYT-Connections* provides a **linguistically isolated and continually novel** challenge requiring **deliberate reasoning**.

- LLMs perform **below human benchmarks**, exhibiting tendencies *between* System 1 and System 2.

- Prompt engineering **is ineffective**, failing to promote System 2 behaviour.

Thank You!

Paper Link

HuggingFace