



InspAlred



Cross-cultural Inspiration Detection and Analysis in Real and LLM-generated Social Media Data

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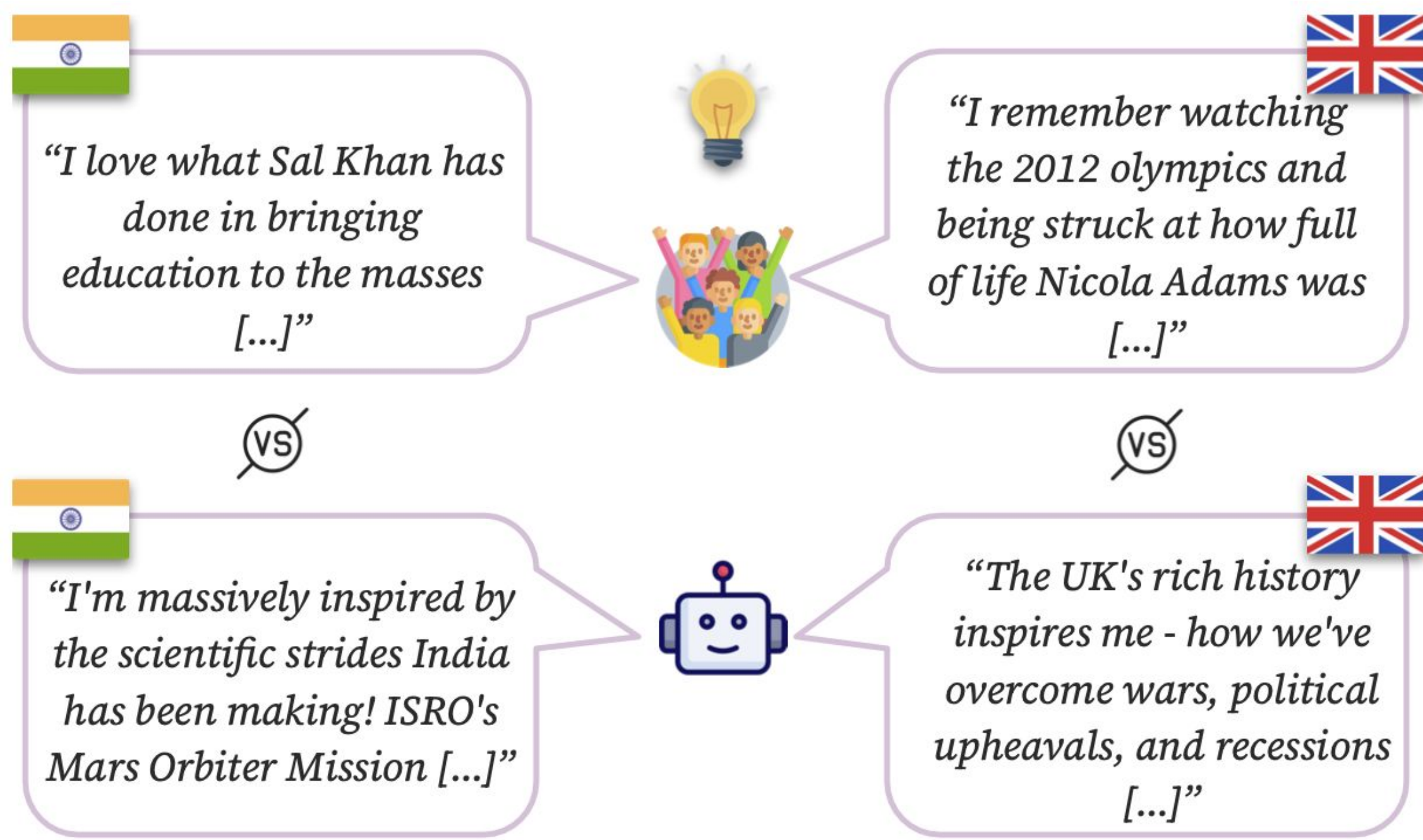


Figure 1. We compare AI-generated and human-written inspiring Reddit content across India and the UK. Although it is challenging for a person to distinguish between them, we find significant linguistic cross-cultural differences between generated and real inspiring posts.

Play a Game?

Real or AI generated inspirational

	Real Post 🇮🇳	GPT4-generated Post 🇬🇧
🇮🇳	<p>💡 The youngest freedom fighter martyr of the country, the brave boy who refused to take the British cops across the river and was shot to death. His name was Baji Rout and he was 12 at the time of his death.</p> <p>✗ What is a common meal there? I've always thought Indian palates to be quite spicy and rich.</p>	<p>💡 Dr. APJ Abdul Kalam - His humble beginnings, insatiable thirst for knowledge, and absolute dedication to his country have been my greatest inspiration. It pushed me to work harder, dream big, and contribute to society.</p> <p>✗ N/A</p>
🇬🇧	<p>💡 Dr. Helen Sharman. I'm very pleased to come from a country whose first astronaut isn't a man by default. Equality shouldn't be about women catching up, it should be about women being first 50% of the time.</p> <p>✗ Mate all he does is play football and misses pens. Not that special</p>	<p>💡 Absolutely love Sir David Attenborough's documentaries. His passion and commitment to preserving the environment is truly inspiring in these challenging times.</p> <p>✗ N/A</p>

Please read: Inspiration Definition

Something that fills people with an animating or exalting influence, or produces rousing feelings, novel thoughts, or a motivation to act.

! Note that we are not asking if the poster is inspired !

Example of inspiring post: "Never regret your decisions, every mistake makes u smarter and stronger"

Example of non-inspiring post: "Three months going on one year. He is such a light in the midst of all the chaos. We are so thankful for our little boo."

Sir David Attenborough. He's brought the wonders of the natural world to millions. Inspiring people to pay more attention to life and it's beauty. The dude is in his 90s and still kicking it.

Is this text inspiring to you?

☐ yes

☐ no

Move backward

Move forward

Figure 2. We use the Potato (Pei et al., 2022) annotation platform and provide workers with guidelines to annotate whether a given text is inspiring.

	# NON-INSPIRING ✗		# INSPIRING 💡	
	Annotated	Weakly-Labeled	Annotated	Weakly-Labeled
🇮🇳	100	900	100	900
🇬🇧	100	900	100	900

Table 1. Final number of inspiring and non-inspiring posts across India and the UK.

Contributions

- ❖ **Novel Task and Dataset** – 6,000 **Reddit** posts (2,000 real inspiring, 2,000 non-inspiring, 2,000 LLM-generated inspiring) balanced across **India** and the **UK**.
- ❖ **AI vs. Human Language Markers** – Syntactic & lexical differences in LLM-generated vs. real inspirational posts, across cultures.
- ❖ **Inspiration Detection Insights** – Assessment of performance across diverse data sources (real vs. fake) and cultures.

Code and Dataset:



Evaluation Results

Analytic score: LLM-generated inspiring posts from the UK and India are more complex than real posts. There is no significant difference in text complexity between real inspiring posts from India and those from the UK.

Descriptiveness score: LLM-generated inspiring posts from the UK and India are more descriptive than real posts. Additionally, real inspiring posts from India are more descriptive than those from the UK.

Readability score: LLM-generated inspiring posts from the UK and India are less readable than real posts. Real inspiring posts from India are less readable than the UK one.

	🇮🇳				🇬🇧			
LIWC	💡	✗	💡	✗	💡	✗	💡	✗
Social Processes								
FAMILY	0.4	0.4	0.2	0.2	0.1	0.2		
FRIEND	0.3	0.4	0.2	0.2	0.4	0.2		
FEMALE	0.4	0.3	0.2	0.4	0.4	0.2		
MALE	1.1	1.0	0.9	0.9	1.3	1.7		
SOCIAL	9.3	7.7	8.6	7.4	8.1	8.1		
Affective Processes								
AFFECT	6.1	4.3	8.4	5.4	4.8	9.4		
NEGEMO	1.4	1.3	1.0	1.3	1.6	0.9		
POSEMO	4.5	3.0	7.3	4.1	3.1	8.3		
Cognitive Processes								
COMPARE	3.0	2.4	1.8	3.0	2.7	1.8		
INSIGHT	2.3	2.0	4.8	2.2	2.1	4.9		
Perceptual Processes								
FEEL	0.6	0.4	0.4	0.7	0.3	0.4		
PERCEPT	2.4	2.0	2.1	2.1	2.1	2.4		
Personal Concerns								
ACHIEV	1.9	1.0	3.5	2.4	1.6	2.6		
HEALTH	0.7	0.4	0.9	1.0	0.8	0.8		
HOME	0.3	0.2	0.1	0.7	0.4	0.2		
LEISURE	1.5	1.4	1.2	1.7	1.4	0.9		
MONEY	0.7	0.8	0.6	1.2	0.8	0.4		
RELIG	0.4	0.5	1.1	0.1	0.1	0.6		
REWARD	2.0	1.1	1.0	2.2	1.6	1.1		
WORK	3.0	1.9	3.0	3.9	2.7	1.9		

Table 2: Comparing LIWC scores across cultures (India and the UK) in inspiring vs. non-inspiring and real vs. LLM-generated posts

	🇮🇳		🇬🇧	
	💡	✗	💡	✗
Analytic	-16.7 ± 18.0	-6.9 ± 10.0	-17.1 ± 19.9	-7.0 ± 11.4
Descriptive	8.2 ± 7.8	8.9 ± 3.6	6.6 ± 5.9	9.1 ± 3.9
Readable	36.3 ± 63.1	12.1 ± 20.6	53.2 ± 52.2	29.6 ± 18.0
Word Count	61.1 ± 59.8	66.9 ± 20.3	43.9 ± 49.3	49.9 ± 16.8

Table 1. To what degree is the LLM-generated text stylistically and structurally different from the real text? We compute the mean and standard deviation for the inspiring posts, across cultures

	precision	recall	f1-score	precision	recall	f1-score
UK	84.2	90.4	87.2	96.5	91.7	94.1
India	89.3	83.5	86.3	92.0	96.6	94.3
Real	99.6	97.8	98.7	100.0	100.0	100.0
Generated	94.5	99.3	96.8	100.0	100.0	100.0
Inspirational	90.5	92.4	91.5	97.5	95.7	96.6
Non-Inspirational	84.1	81.4	82.7	91.5	94.9	93.2
micro avg	91.0	91.3	91.2	96.5	96.5	96.5
macro avg	90.4	90.8	90.5	96.2	96.5	96.3

few-shot

default

Table 3: Multi-label classification test results with the few-shot and default setups with the XLM-RoBERTa base model. A default train-val-test split of 64-16-20% and a few-shot split of 8-2-90%.

Even with very few-shot (600 posts), the model learns to accurately distinguish inspiring content across cultures (India, UK) and data sources (real and generated).