Human vs LMMs: Exploring the Discrepancy in Emoji Interpretation and Usage in Digital Communication

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Motivation

❑ LMMs are used to simulate human behavior in processing social media's multimodal information.
❑ Emojis crucially enrich and clarify digital communication's emotional tone.
❑ There is a gap in understanding how models like GPT-4V interpret emojis in online interactions.

Research Question 1

❑ **How does GPT-4V's interpretation of emojis compare with that of humans?**

Study Design. We prompt GPT-4V to describe each emoji using a single word. The generated word is then compared with the word chosen by humans to describe the same emoji.

Prompt. *"Describe the emoji with a single, accurate word."*

Emoji Selection. A carefully curated collection of 1,289 commonly-used emojis. Each emoji in this dataset has been categorized into one of the 20 fine-grained groups (Częstochowska et al. 2022).

Semantic Difference. We transform each word into its vector representation using GloVe vectors. We then measure the semantic dispersion by calculating the centroid distance.
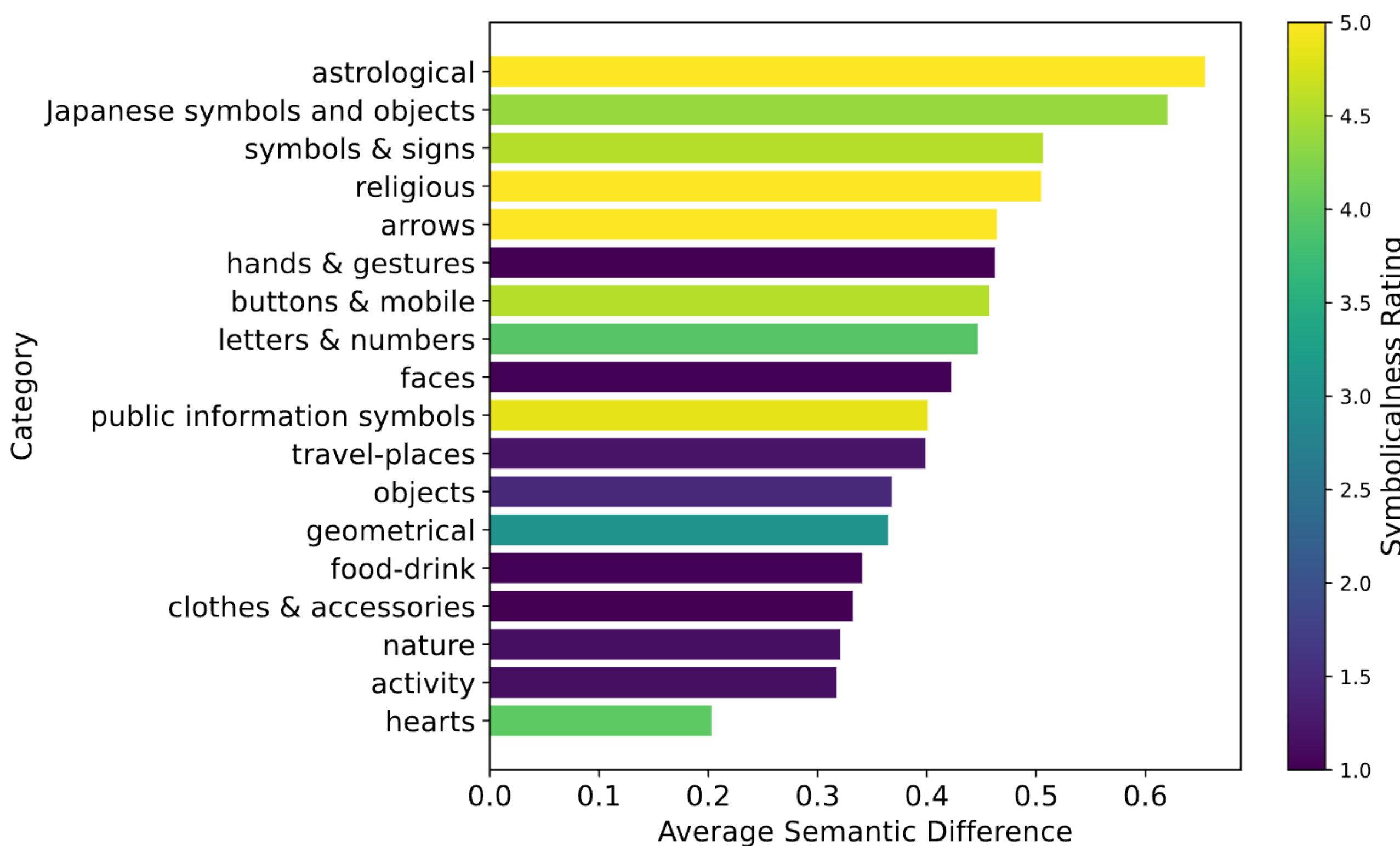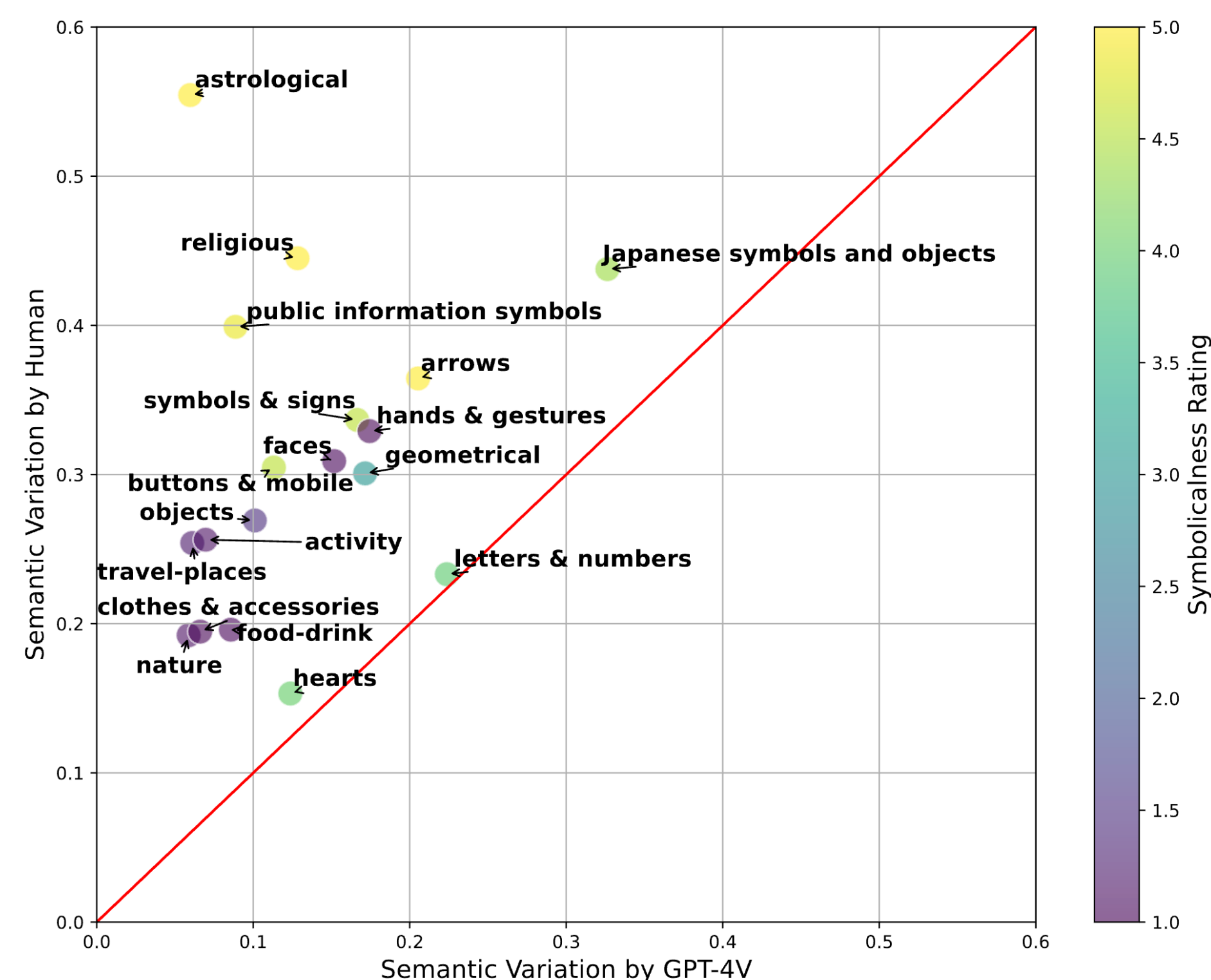
Results.

❑ Greatest differences in categories like
  ❑ Astrological (e.g., ♍, ♉, ↗)
  ❑ Japanese symbols and objects (e.g., 合, サ, ココ)
  ❑ Religious (e.g., ☪, ✡, ✝)

❑ Lowest differences in categories like
  ❑ Hearts (e.g., 💙, 💝, 💔)
  ❑ Activity (e.g., 🏉, 🏐, 🎾)
  ❑ Nature (e.g., 🐼, 🌻, 🌳)

❑ We quantitatively assess the ambiguity exhibited by both GPT-4V and humans in their emoji interpretation.

❑ GPT-4V demonstrates less interpretative ambiguity compared to humans.

❑ Misinterpretations may result from the limitations in GPT-4V's training data which is primarily sourced from English corpora.

Research Question 2

❑ **Does GPT-4V employ emojis in writing social media posts in a manner that differs from human usage?**

Study Design. We use a specific prompt to elicit the emojis that GPT-4V would recommend for a social media post to investigate how well GPT-4V simulates human behavior.

Prompt. *"Imagine you are a social media user seeking the most suitable emojis for your social media posts based on the {context}. Please respond with only three emojis that would be optimal for this purpose."*

Context. We use the video descriptions from TikTok, with emojis removed, to serve as the context for GPT-4V. We then compare the emojis originally used by TikTok users in these descriptions with those suggested by GPT-4V.

Results.

Topic	Text	Human User	GPT-4V
Personal experience	October was a fantastic month. Looking forward to more adventures in November and December.	💪🔥❤️🥰💕	⭐📅✨
Pets	Enjoying myself and basking in the sunlight!	😶🐶	🐱☀️🍴
Family	A wedding present for my brother and sister-in-law. Best wishes on their union.	🥰🎉	💝👰🏠✨
Music	Step into the booth and I swiftly alter my persona, just like Clark Kent!	🎸🕺	🎤🎶🎵
Sports	Extremely happy and proud of Mary, fantastic job!	🤍🥺😊	🎉🏆😄
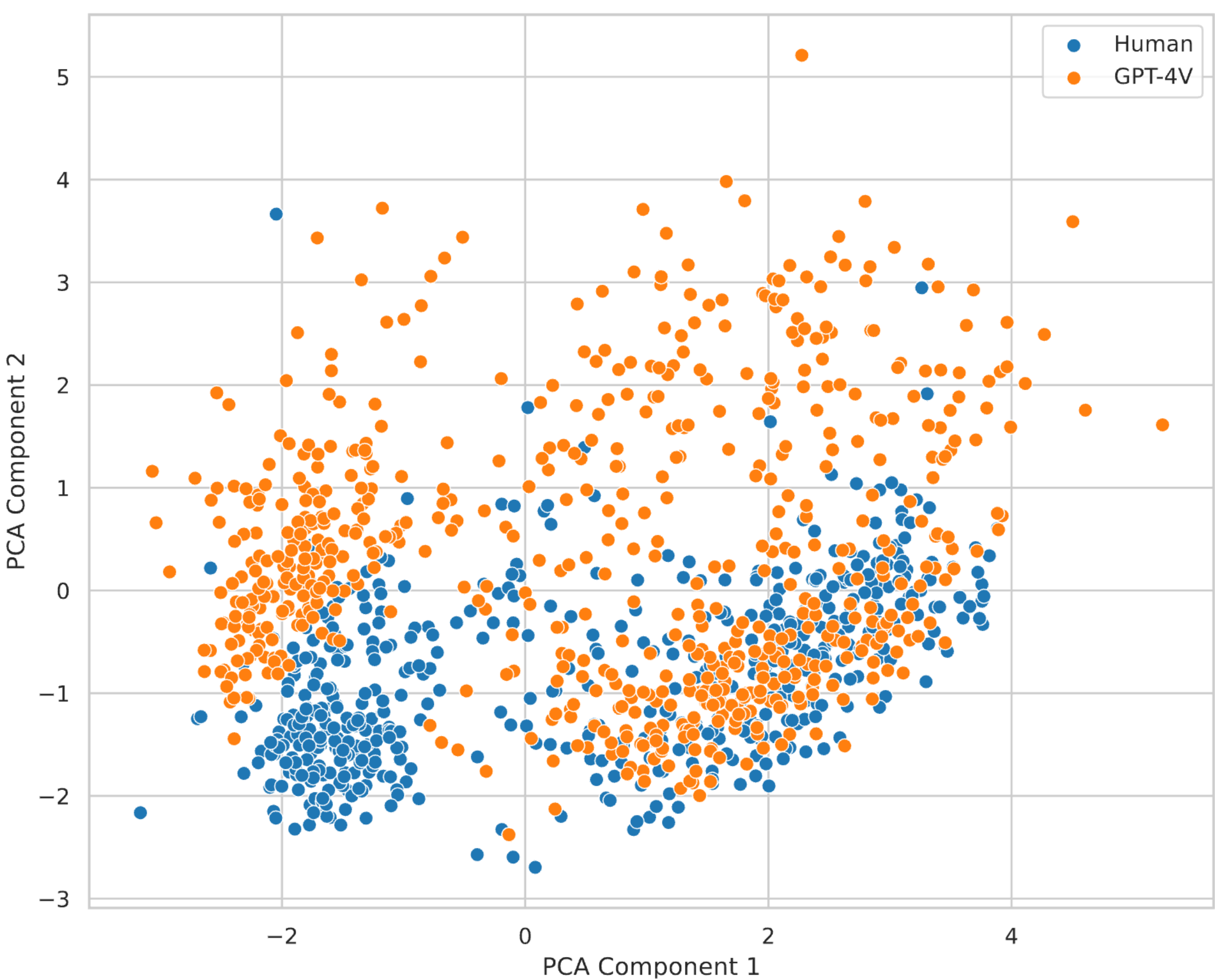
❑ Variance in the distances across different topics is not markedly significant.

❑ GPT-4V partially mirrors human emoji usage patterns.

❑ A potentially greater variety in emoji selection by GPT-4V.

Future Work

❑ LMMs trained on non-English corpora.

❑ Emojis more commonly-used in non-English speaking communities.