

Computational Systems as Co-creative Agents for Visual Humour Generation

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Abstract

Visual humour in the form of memes transcends geographical and cultural boundaries, enabling individuals to express themselves, share ideas, and participate in online communities. They combine text and visuals, employing humour mechanisms and cultural references to convey messages. The process of meme creation, however, can be complex, especially when trying to convey humour, requiring a combination of creativity, cultural awareness, and technical skills. As a result, the task of creating memes for visual humorous purposes is not trivial. To address this gap, we leverage generative models to help users ideating and generating visual humour in the format of internet memes by developing two systems that use different interfaces and let the user communicate with a large language model and an image generation model.

Keywords

Meme Generation, Visual Humour, Internet Meme, Co-creativity

1. Introduction

The environment of Web 2.0 gave users the ability to create and share their own memes that can mix pop culture, politics, and participation unpredictably, which shows their versatility in terms of the relationship between different subjects [1]. Despite the growing interest in leveraging generative models for computational internet meme research, current investigations focus mainly on meme classification and generation, without helping the user ideating their own visual humour concept [2].

2. The systems

To address this gap, we propose two systems using different interaction modalities: one with a conversational interface and another one connecting blocks on a canvas. Both co-creative systems leverage a large language model to help users in visual humour ideation, and an image generation model to materialise their concepts. This is achieved by using the artificial agent to facilitate divergent thinking while relying on the user for convergent thinking to refine and select the most suitable ideas for humorous image generation. The first system, that employs a conversational interface, engages users in a more natural interaction, relying on the popularity of conversational tools, such as ChatGPT and Copilot (Fig. 1). The second system utilises a more visual and spatial interface, with blocks representing specific meme components that are placed on an infinite movable canvas, offering a more visual approach and suggesting content that users can incorporate into their blocks (Fig. 2).

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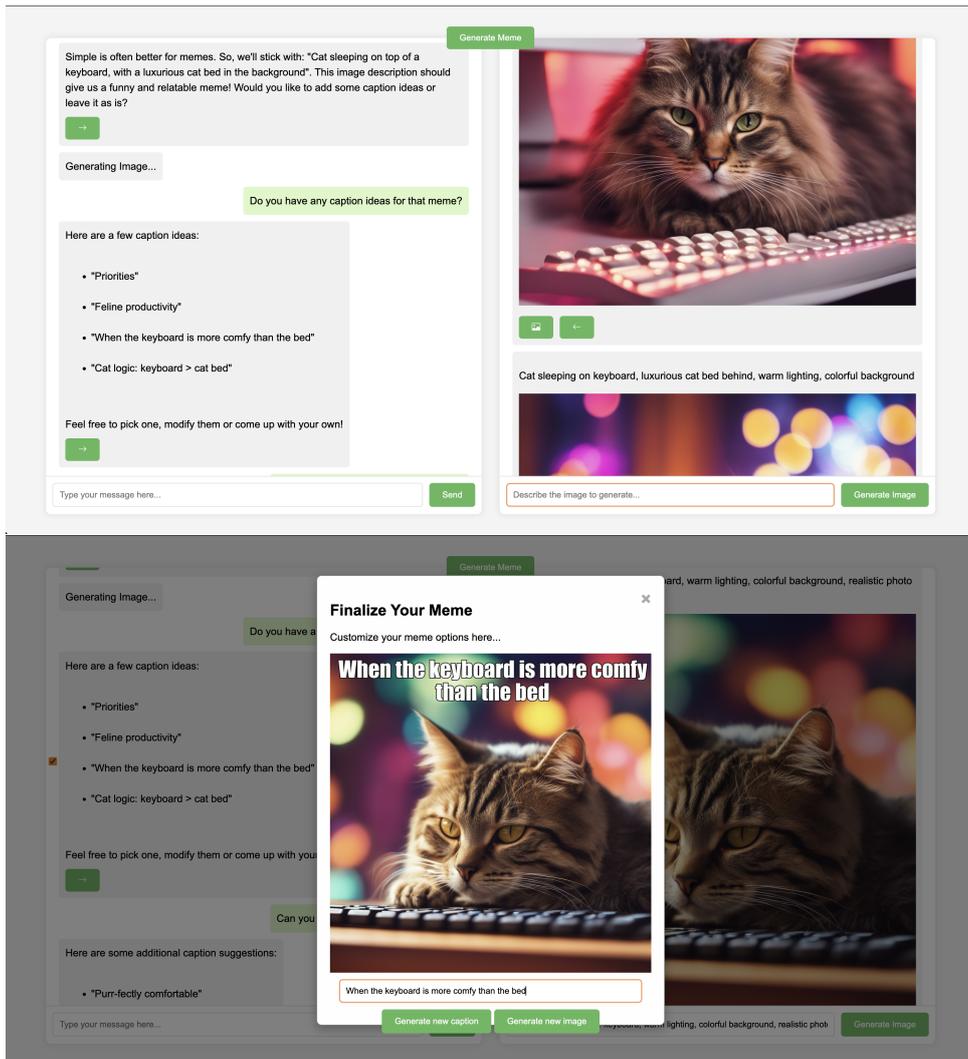


Figure 1: Interface of the Conversational system

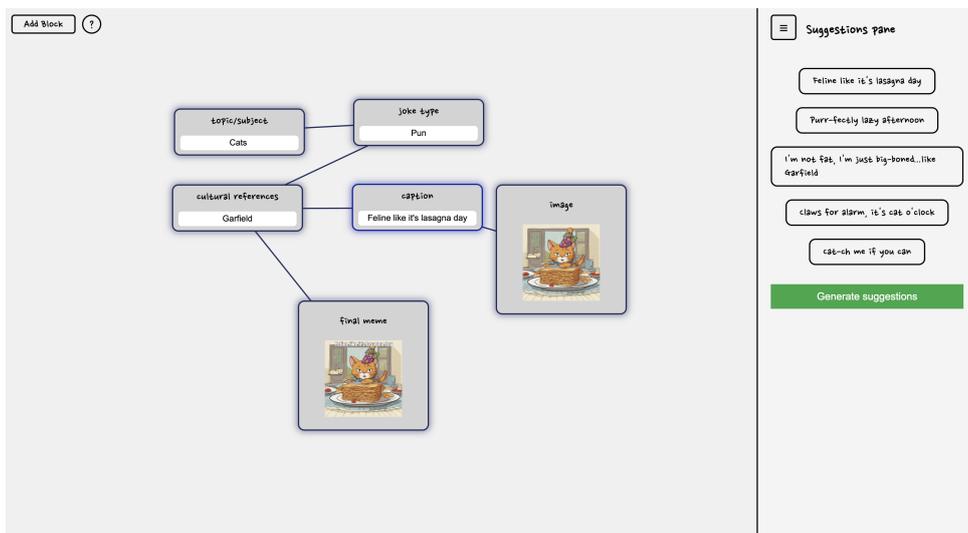


Figure 2: Interface of the Blocks system

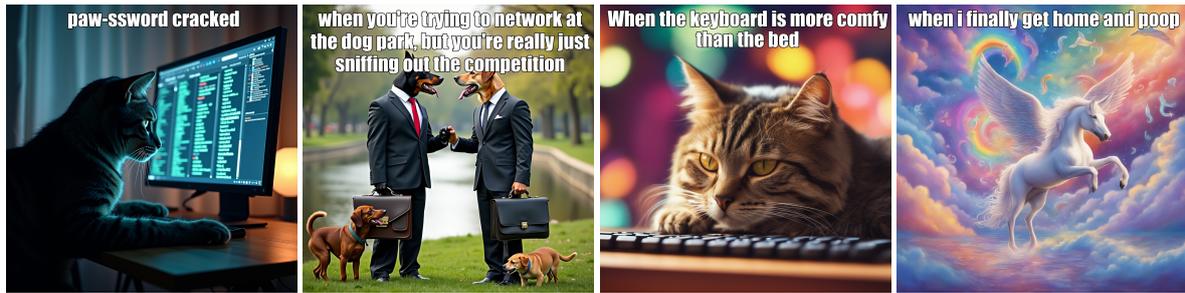


Figure 3: Images produced by the Conversational system



Figure 4: Images produced by the Blocks system

3. Results

Results show that the exploratory nature of the Blocks system allowed users to explore more ideas and outcomes, while the natural language interaction of the Conversational System allowed for a more immersive experience. Both systems shown high creativity support scores using the Creativity Support Index [3]. Using a binary evaluation for the outputs generated by users (Figs. 3 and 4), evaluating as funny or not-funny, we were able to circumvent the humour evaluation subjectivity and obtain a humour frequency score [4], which shows that, for both systems, more than half of the outputs are considered funny.

References

- [1] L. Shifman, *Memes in Digital Culture*, The MIT Press Essential Knowledge Series, The MIT Press, Cambridge, Massachusetts, 2014.
- [2] R. M. Milner, Pop Polyvocality: Internet Memes, Public Participation, and the Occupy Wall Street Movement, *International Journal of Communication* 7 (2013) 34. URL: <https://ijoc.org/index.php/ijoc/article/view/1949>.
- [3] E. Cherry, C. Latulipe, Quantifying the Creativity Support of Digital Tools through the Creativity Support Index, *ACM Trans. Comput.-Hum. Interact.* 21 (2014) 21:1–21:25. URL: <https://dl.acm.org/doi/10.1145/2617588>. doi:10.1145/2617588.
- [4] A. Valitutti, How Many Jokes are Really Funny? Towards a New Approach to the Evaluation of Computational Humour Generators, in: *Copenhagen studies in language*, 2011, pp. 189–200. URL: <http://pascal-francis.inist.fr/vibad/index.php?action=getRecordDetail&idt=27933703>, iSSN: 0905-7269, Issue: 41.