Toward the Development of a Japanese Food Culture QA

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Abstract

"Food" is one of the most complex domains of cultural knowledge, as it reflects historical, regional, and social contexts. It has also been identified as one of the most challenging domains for large language models (LLMs) to reproduce accurately. This study aims to evaluate the food culture understanding of LLMs by developing a question-answering (QA) dataset focused on Japanese food culture.

We have been developing SakuraQA, a QA dataset designed to assess knowledge of contemporary trends in Japan. In this study, we extend the food culture category of SakuraQA and construct a new Japanese Food Culture QA dataset.

The dataset consists of multiple-choice questions designed to evaluate both traditional and contemporary aspects of Japanese food culture, organized into two main categories: (1) Traditional and Regional: Questions assessing knowledge of Japan's traditional and regionally grounded food culture, such as local specialties and seasonal customs (e.g., "What dish do Japanese people traditionally eat during the New Year holidays?"). (2) Contemporary and Popular: Questions reflecting modern trends in Japanese food culture, including neologisms, abbreviations, restaurant chains, new products, and social media–driven food trends (e.g., "What dish is commonly referred to as 'TKG' in Japan?").

Through these QA tasks, we aim to reveal how well LLMs comprehend Japanese cultural understanding and adapt to both traditional and contemporary cultural contexts. We compare Japanese, multilingual, and closed-source models to analyze differences in cultural understanding across categories. Based on this comparison, we provide insights into how Japanese LLMs can further improve their handling of cultural knowledge.

This study addresses the question of how cultural understanding can be effectively integrated into Japanese LLMs. By situating the discussion in an international context, we aim to contribute to a broader perspective on cultural understanding in LLMs and to the development of evaluation frameworks that capture the depth of food culture understanding in LLMs.