ABSTRACT

Role-Play Based Prompting Prediction Using Deep Learning Model

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This research focuses on developing a system capable of automatically generating role-play-based prompts. The background of this study lies in the fact that manually crafting prompts is time-consuming and inefficient, especially when applied at scale. To address this issue, an automated approach is proposed to generate prompts based on a combination of zero-shot prompts and predefined roles. The implementation involves three deep learning models: Recurrent Neural Network (RNN), Gated Recurrent Unit (GRU), and Long Short-Term Memory (LSTM). Each model is trained using triplet-formatted data consisting of a zero-shot prompt, a role, and a target prompt. The models are designed to generate predicted prompts that closely resemble the manually constructed target prompts.

Evaluation is conducted using two primary metrics: BLEU score and ROUGE score, to assess the similarity between predicted and target prompts. Experimental results show that the LSTM model achieves the highest BLEU score of 0.71, followed by GRU (0.69) and RNN (0.67). The ROUGE scores, particularly ROUGE-1 and ROUGE-L, also indicate that the generated content aligns well with the intended structure and semantics.

Keywords: ***Large Language Model, Role-Play Prompting, Zero-Shot Prompt, Prompt Prediction, Deep Learning43***