[Accept]: Decision on ICONIP2023 Submission 1158 ☆

ICONIP2023

发给 Zhiliang Tian

2023-07-31 22:51 隐藏信息

发件人: ICONIP2023<iconip2023@easychair.org>
收件人: Zhiliang Tian<tianzhiliang@nudt.edu.cn>
时间: 2023年7月31日 (周一) 22:51
大小: 14 KB

Dear Zhiliang Tian,

Paper ID: 1158
Paper Title: Retrieval-augmented GPT-3.5-based Text-to-SQL Framework with Sample-aware Prompting and Dynamic Revision Chain
Author(s): Chunxi Guo, Zhiliang Tian, Jintao Tang, Shasha Li, Zhihua Wen, Kaixuan Wang, Ting Wang

Congratulations! We are pleased to inform you that your above paper 1158 has been accepted to the 2023 International Conference on Neural Information Processing (ICONIP2023).

Please complete Camara Ready Submission, the Electronic Copyright Form, and the registration by September 15, 2023. The details will be sent later by email.

On behalf of the ICONIP2023 Committee, thank you for your contribution and look forward to seeing you in Changsha, China, November 20-23, 2023.

Best regards,

ICONIP2023 Program Chairs.

Camara Ready Submission (details will be sent by another email): http://www.iconip2023.org/web_submission.htm
Registration (will be available soon): http://www.iconip2023.org/web_registration.htm

SUBMISSION: 1158
TITLE: Retrieval-augmented GPT-3.5-based Text-to-SQL Framework with Sample-aware Prompting and Dynamic Revision Chain

Retrieval-augmented GPT-3.5-based Text-to-SQL Framework with Sample-aware Prompting and Dynamic Revision Chain

Chunxi Guo, Zhiliang Tian [(✉)], Jintao Tang, Shasha Li, Zhihua Wen, Kaixuan Wang and Ting Wang [(✉)]

College of Computer, National University of Defense Technology, Changsha, China
{chunxi, tianzhiliang, tangjintao, shashali, zhwen, wangkaixuan18, tingwang}@nudt.edu.cn

Abstract. Text-to-SQL aims at generating SQL queries for the given natural language questions and thus helping users to query databases. Prompt learning with large language models (LLMs) has emerged as a recent approach, which designs prompts to lead LLMs to understand the input question and generate the corresponding SQL. However, it faces challenges with strict SQL syntax requirements. Existing work prompts the LLMs with a list of demonstration examples (i.e. question-SQL pairs) to generate SQL, but the fixed prompts can hardly handle the scenario where the semantic gap between the retrieved demonstration and the input question is large. In this paper, we propose a retrieval-augmented prompting method for an LLM-based Text-to-SQL framework, involving sample-aware prompting and a dynamic revision chain. Our approach incorporates sample-aware demonstrations, which include the composition of SQL operators and fine-grained information related to the given question. To retrieve questions sharing similar intents with input questions, we propose two strategies for assisting retrieval. Firstly, we leverage LLMs to simplify the original questions, unifying the syntax and thereby clarifying the users' intentions. To generate executable and accurate SQLs without human intervention, we design a dynamic revision chain that iteratively adapts fine-grained feedback from the previously generated SQL. Experimental results on three Text-to-SQL benchmarks demonstrate the superiority of our method over strong baseline models.

Keywords: Large language model, Text-to-SQL, Prompt learning

1 Introduction

Text-to-SQL task aims to convert natural language question (NLQ) to structured query language (SQL), allowing non-expert users to obtain desired information from databases [1, 2]. As databases are popular in various scenarios involving different domains (e.g., education and financial systems, etc.), it is desirable to train a model that generalizes well across multiple domains. To facilitate cross-domain generalization [3,4], researchers adapt encoder-decoder architecture [5,6],