Assignment 2: Prompt Learning

Due: 10/22

Shin et al. (“AUTOPROMPT: Eliciting Knowledge from Language Models with Automatically Generated Prompts”, EMNLP2020) proposed a method to automatically create prompts and apply them to various Natural Language Processing tasks. Li et al. (“Document-Level Event Argument Extraction by Conditional Generation”, NAACL-HLT2021) proposed a similar idea for event ex- traction using natural language generation controlled by input templates which are similar to prompts.

Part 1

* (a)  The key challenge of prompt learning is to automatically design the prompts and templates. Manual creation of prompts is an art, which requires certain linguistic intuition and expertise. Please discuss the pros and cons of the proposed automatic prompt creation methods in this paper, compared to manual creation methods. You might want to check the examples in Table 7. (3 points)
* (b)  Using one of the tasks listed in Table 3 as an example, in your own words, describe how this paper constructs prompts. Can you propose ideas to further enhance the proposed method for prompt construction? For instance, how to combine the merits of discrete prompts and continuous prompts (where the prompts are described in an embedding space)? How to rank candidate prompts? How to choose a pre-trained language model? Is there any better training objective or noisying function? (3 points)

Part 2

* (a)  Prompts are usually applied to each category in isolation, see the examples in Table 3. How- ever, in the real world, information is often inter-connected. For example, a musician (instead of a politician) is more likely to release an album, an attacker (instead of a victim) is more likely to be arrested. Discuss how to encode such cross-category or cross-fact inter-dependency knowledge in the prompt construction or learning process. (2 points)
* (b)  Both papers have only tried monolingual tasks. How to extend them to multi-lingual or cross-lingual settings? For example, can we design English prompts to extract events from a foreign language? (2 points)