Promptriever: Instruction-Trained Retrievers Can Be Prompted Like Language Models

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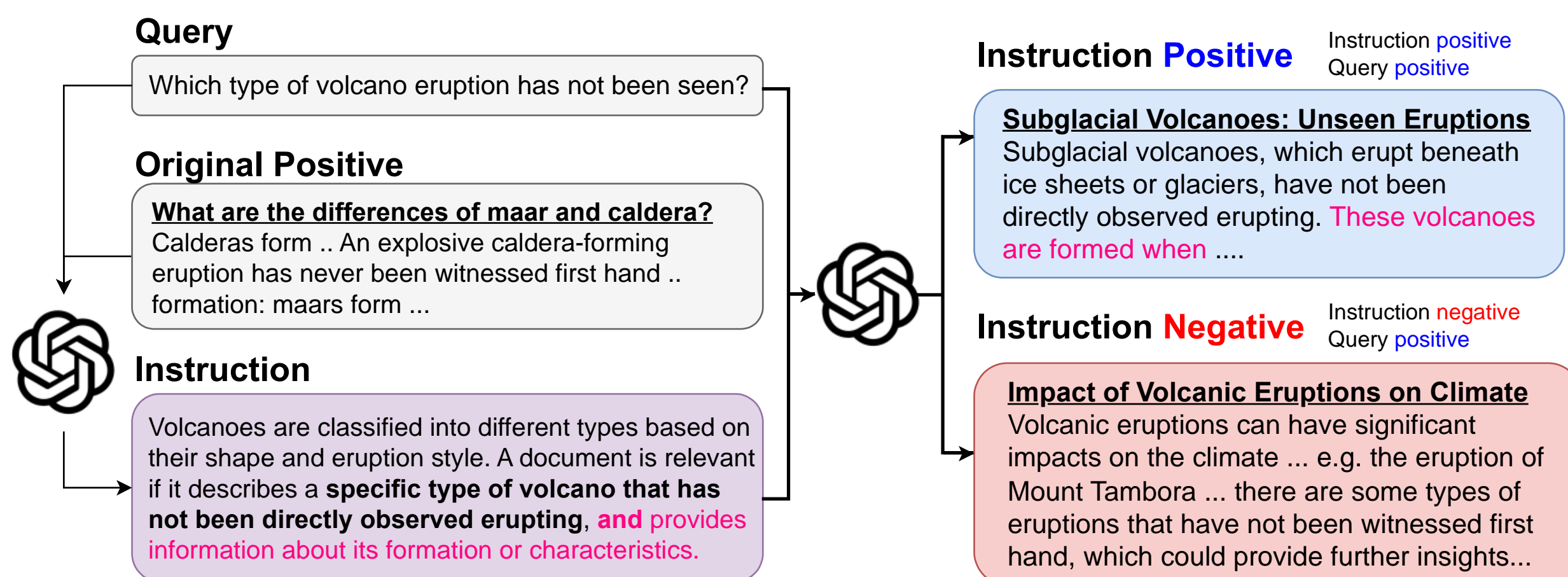
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Introduction

- Retrieval models usually take queries which are short and used for keyword matching
- But why can't retrieval models take instructions like LLMs, since they use instruction-based LMs?
- We expand MS MARCO with *instructions* and *instruction negatives* and show that training on it makes a retrievers *promptable*

Data Generation Process

Query Capabilities

(Top) Promptable retrievers differ from standard retrievers by the ability to take instructions/prompts (specific to the query) just like a language model.

(Left) We generate the dataset by first creating an instruction that is more specific than the query, then generating ***instruction negatives*** to teach the model to learn to be sensitive to these instructions.

Can retrieval models follow instructions?

Results

(Left) Promptable retrievers show significant gains on instruction-based retrieval tasks.

(Center) Promptable retrievers show much greater robustness to prompt phrasing.

(Right) Promptable retrievers show equal performance on BEIR with no prompt and +1.4 avg w/ them.

Instruction Following

SD over 10 Prompts

BEIR (OOD)