CLAIMS

1. A post-training method for a large question-answering model, comprising steps of:

acquiring multiple pieces of inference data;

obtaining at least one first sample for each piece of the inference data using a progressive reasoning type construction rule based on the inference data, wherein a first subset comprises all first samples corresponding to each piece of the inference data;

obtaining at least one second sample for each piece of the inference data using a progressive decomposition type construction rule based on the inference data, wherein a second subset comprises all second samples corresponding to each piece of the inference data;

obtaining at least one third sample for each piece of the inference data using a mid-segment extraction type construction rule based on the inference data, wherein a third subset comprises all third samples corresponding to each piece of the inference data;

obtaining at least one fourth sample for each piece of the inference data using a step-by-step reasoning type construction rule based on the inference data, wherein a fourth subset comprises all fourth samples corresponding to each piece of the inference data; and

performing post-training processing on the large question-answering model using the inference dataset, wherein the inference dataset is configured to guide the large question-answering model to learn to perform step-by-step reasoning on an input question, wherein the inference dataset comprises: the first subset, the second subset, the third subset and the fourth subset, wherein the first subset is configured to guide the large question-answering model to learn to answer the input question step by step, the second subset is configured to guide the large question-answering model to learn to logically decompose the input question, the third subset is configured to guide the large question-answering model to learn to complement a missing intermediate process based on a step-by-step reasoning mode, and the fourth subset is configured to guide the large question-answering model to learn to answer step by step following logical decomposition on the input question,

wherein the inference data comprises the original question, N logically hierarchical progressive sub-questions obtained by splitting the original question and sub-answers of each sub-question; and the step of obtaining at least one third sample using a mid-segment extraction type construction rule based on the inference data comprises:

concatenating a third prompt text, and each sub-question and sub-answer in the inference data, excluding a first sub-question and a first sub-answer, to obtain a first third sample, and setting a

label of the first third sample as a first sub-question and a first sub-answer in the inference data, wherein the third prompt text is configured to instruct the large question-answering model to infer missing intermediate sub-questions and intermediate sub-answers thereof in an input content based on the input content; and

concatenating the third prompt text, and each sub-question and sub-answer in the inference data, excluding an m-th sub-question and an m-th sub-answer, to obtain an m-th third sample, and setting a label of the m-th third sample as the m-th sub-question and the m-th sub-answer in the inference data, where m = 2, 3, …, N-1.

2. The method according to claim 1, wherein the step of obtaining at least one first sample using a progressive reasoning type construction rule based on the inference data comprises:

concatenating a first prompt text, and the original question and a first sub-question in the inference data to obtain a first one of first sample, and setting a label of the first one of first sample as a first sub-answer in the inference data, wherein the first prompt text is configured to instruct the large question-answering model to infer an answer to a last sub-question in an input content based on the input content; and

concatenating the first prompt text, and the original question, an n-th sub-question, and each sub-question preceding the n-th sub-question and sub-answers thereof in the inference data to obtain an n-th first sample, and setting a label of the n-th first sample as an n-th sub-answer in the inference data, wherein n = 2, 3, …, N.

3. The method according to claim 1, wherein the step of obtaining at least one second sample using a progressive decomposition type construction rule based on the inference data comprises:

concatenating a second prompt text, and the original question and a first sub-question in the inference data to obtain a first second sample, and setting a label of the first second sample as a second sub-answer in the inference data, wherein the second prompt text is configured to instruct the large question-answering model to obtain a sub-question immediately succeeding a last sub-question in an input content by decomposing the original question in the input content based on the input content; and

concatenating the second prompt text, and the original question, an m-th sub-question and each preceding sub-question in the inference data to obtain an m-th second sample, and setting a

label of the m-th second sample as an (m+1)-th sub-question in the inference data, wherein m = 2, 3, …, N-1.

4. The method according to claim 1, wherein the step of obtaining at least one fourth sample using a step-by-step reasoning type construction rule based on the inference data comprises:

concatenating a fourth prompt text, and the original question in the inference data to obtain a first fourth sample, and setting a label of the first fourth sample as each sub-question and sub-answer thereof in the inference data, wherein the fourth prompt text is configured to instruct the large question-answering model to infer subsequent sub-questions and sub-answers step by step based on an input content; and

concatenating the fourth prompt text, and the original question, each sub-question preceding an n-th sub-question and sub-answers thereof in the inference data to obtain an n-th fourth sample, and setting a label of the n-th fourth sample as each sub-question subsequent to an (n-1)-th sub-question and sub-answers thereof in the inference data, wherein n = 2, 3, …, N.

5. The method according to claim 1, wherein the step of performing post-training processing on the large question-answering model using the inference dataset comprises:

performing the post-training processing on the large question-answering model using the first subset, the second subset, the third subset and the fourth subset, respectively.

6. A post-training apparatus for a large question-answering model, comprising:

a data acquisition module, configured to acquire multiple pieces of inference data, wherein the inference data is obtained by logically splitting an original question and an original answer thereof;

a construction module, configured to:

obtain at least one first sample for each piece of the inference data using a progressive reasoning type construction rule based on the inference data, wherein a first subset comprises all first samples corresponding to each piece of the inference data;

obtain at least one second sample for each piece of the inference data using a progressive decomposition type construction rule based on the inference data, wherein a second subset comprises all second samples corresponding to each piece of the inference data;

obtain at least one third sample for each piece of the inference data using a mid-segment extraction type construction rule based on the inference data, wherein a third subset comprises all third samples corresponding to each piece of the inference data;

obtain at least one fourth sample for each piece of the inference data using a step-by-step reasoning type construction rule based on the inference data, wherein a fourth subset comprises all fourth samples corresponding to each piece of the inference data; and

a post-training module, configured to perform post-training processing on the large question-answering model using the inference dataset, wherein the inference dataset is configured to guide the large question-answering model to learn to perform step-by-step reasoning on an input question, wherein the inference dataset comprises: the first subset, the second subset, the third subset and the fourth subset, wherein the first subset is configured to guide the large question-answering model to learn to answer the input question step by step, the second subset is configured to guide the large question-answering model to learn to logically decompose the input question, the third subset is configured to guide the large question-answering model to learn to complement a missing intermediate process based on a step-by-step reasoning mode, and the fourth subset is configured to guide the large question-answering model to learn to answer step by step following logical decomposition on the input question,

wherein the inference data comprises the original question, N logically hierarchical progressive sub-questions obtained by splitting the original question and sub-answers of each sub-question; and the construction module, when configured to obtain at least one third sample using a mid-segment extraction type construction rule based on the inference data, is further configured to:

concatenate a third prompt text, and each sub-question and sub-answer in the inference data, excluding a first sub-question and a first sub-answer, to obtain a first third sample, and set a label of the first third sample as a first sub-question and a first sub-answer in the inference data, wherein the third prompt text is configured to instruct the large question-answering model to infer missing intermediate sub-questions and intermediate sub-answers thereof in an input content based on the input content; and

concatenate the third prompt text, and each sub-question and sub-answer in the inference data, excluding an m-th sub-question and an m-th sub-answer, to obtain an m-th third sample, and set a label of the m-th third sample as the m-th sub-question and the m-th sub-answer in the inference data, where m = 2, 3, …, N-1.

7. An electronic device, comprising: a memory and a processor, wherein the memory stores a software program, and when the electronic device runs, the processor executes the software program so as to implement the post-training method for the large question-answering model according to any one of claims 1–5.

8. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program, and the computer program, when executed by the processor, implements the post-training method for the large question-answering model according to any one of claims 1–5.