MI_TJU at TRECVID 2023: Medical Video Question Answering

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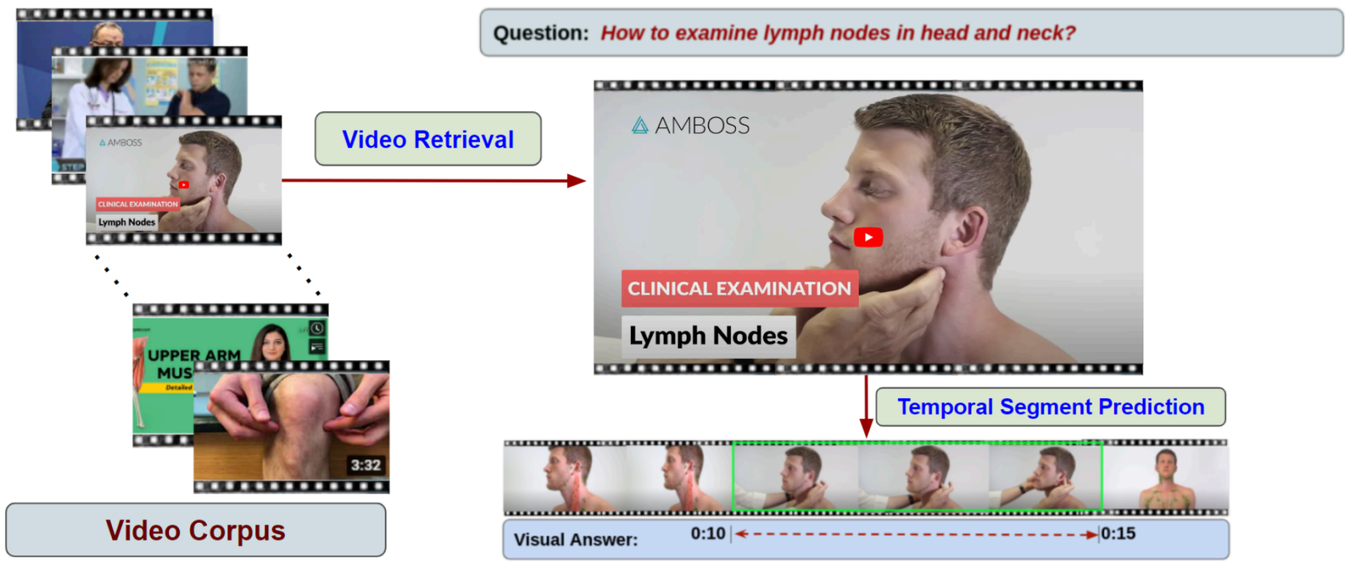
Medical Video Question Answering

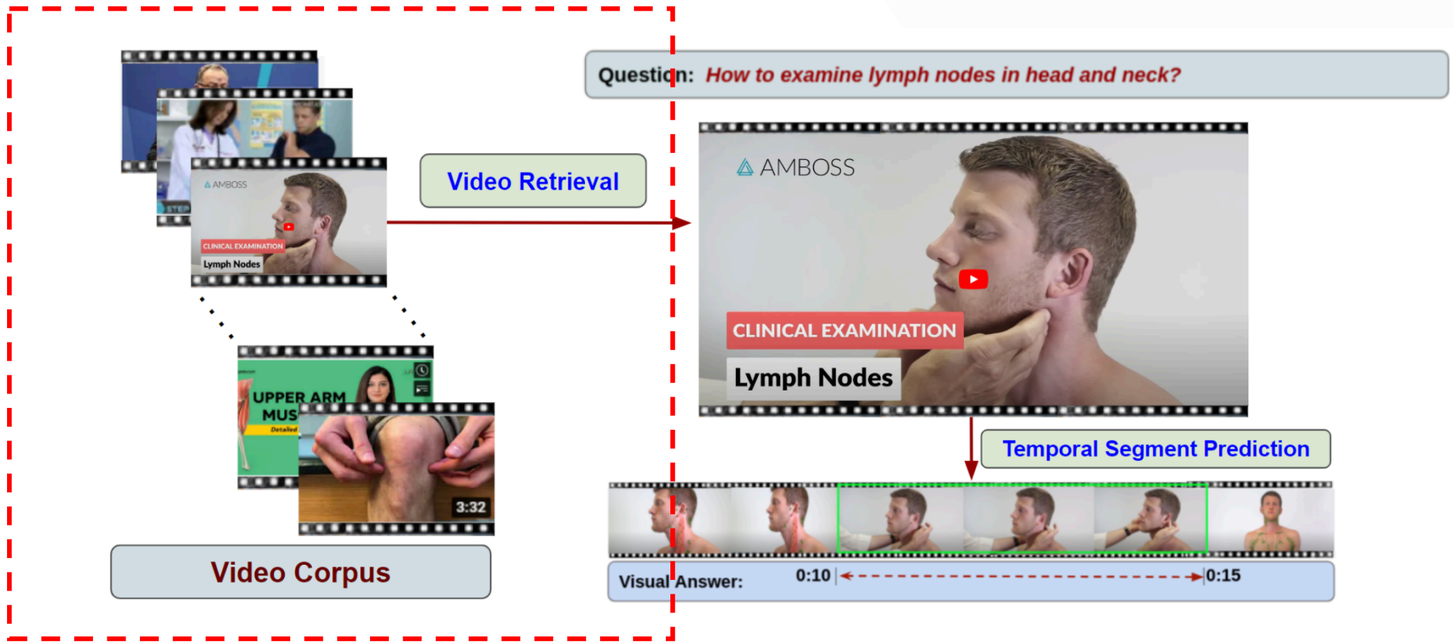
Video Corpus Visual Answer Localization VCVAL

- Video Retrieval
- Temporal Segment Prediction



Video Retrieval

- Goal: Identify the relevant videos according to the questions
- Video corpus: 12657 videos from Youtube.

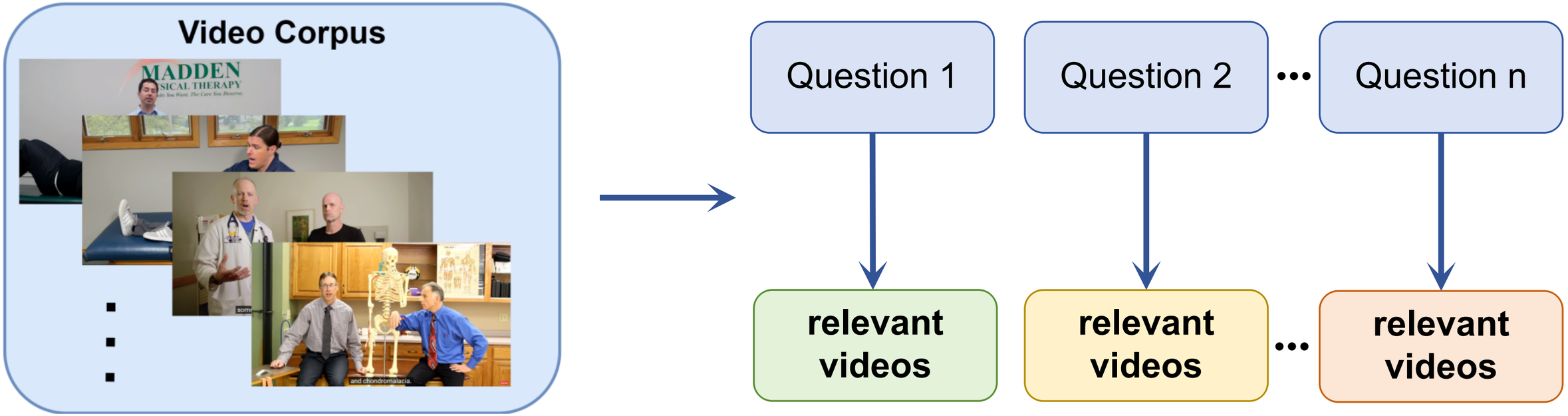


Video corpus

- Video corpus: 12657 videos from Youtube.
- Main Video type: medical instructional videos
- eg. the use of medical instruments, handling injuries, and providing care...
- Extensive subtitles
- Slower pace
- ...

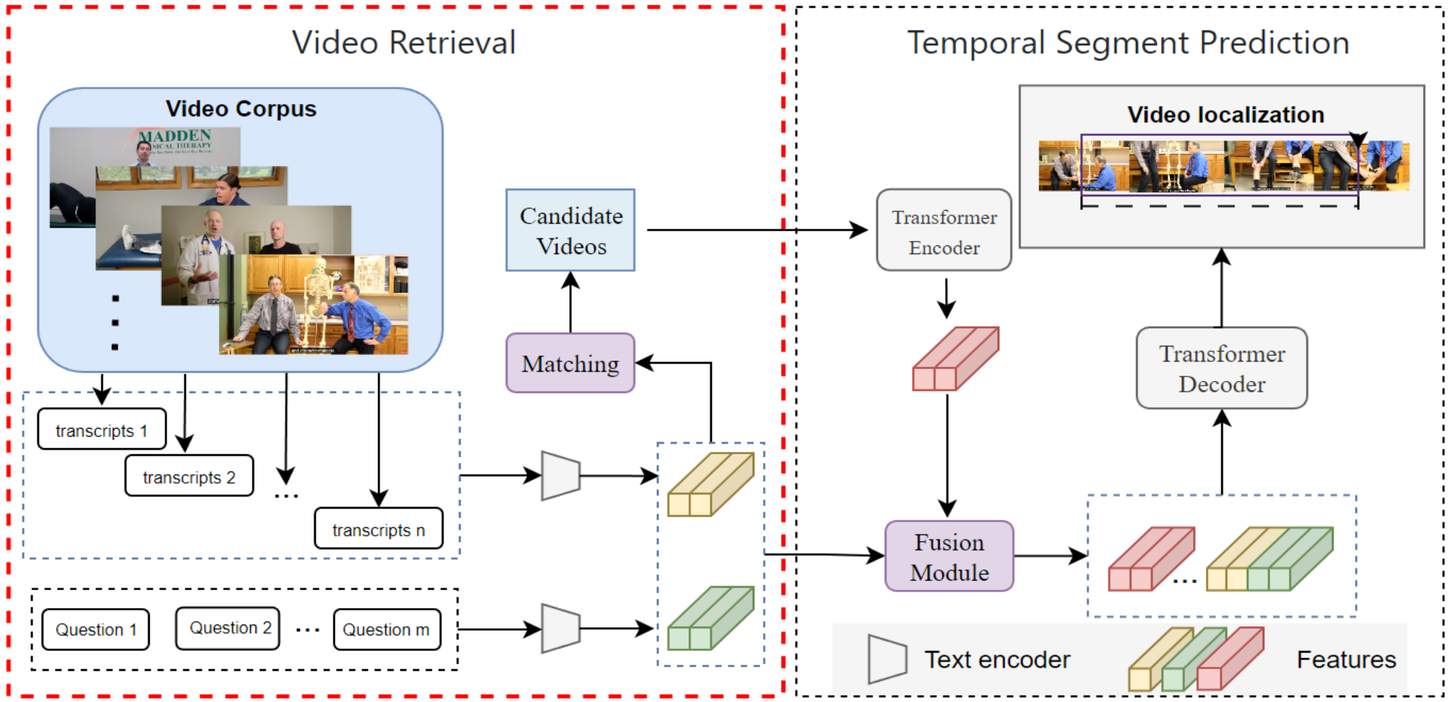
Video Retrieval

- How to summarize the main information of the video?
- Video transcripts / Video substitles



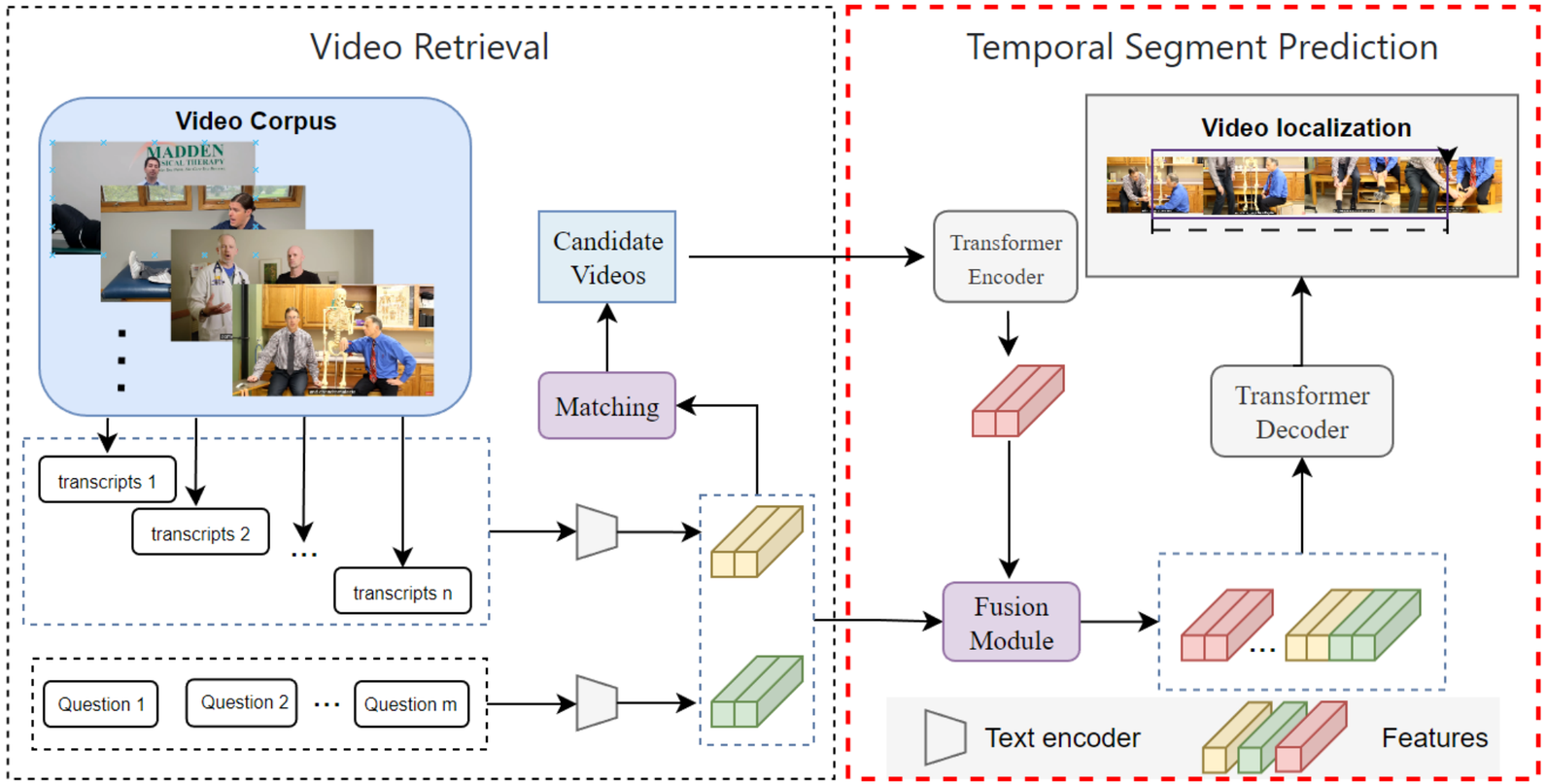
Video Retrieval

- A scoring task between video transcripts and questions
- Visual features are not imperative during video retrieval



Temporal Segment Prediction

- Locate the segments that provides the answer
- or relevant medical information is visually displayed



Results

Video Retrieval :

Table 1. The results of the video retrieval task.

Team	Run ID	MAP	R@5	R@10	P@5	P@10	nDCG
UNCWAI	run-2.json	0.1839	0.1903	0.1903	0.29	0.145	0.2858
VPAI	run-1.json	0.2427	0.2489	0.2489	0.31	0.155	0.3804
UNCWAI	run-1.json	0.3669	0.2221	0.3654	0.395	0.3575	0.5094
UNCWAI	run-3.json	0.3669	0.2221	0.3654	0.395	0.3575	0.5094
MI_TJU	run-1.json	**0.404**	**0.3549**	**0.4132**	**0.545**	**0.3625**	**0.5448**

Results

Temporal Segment Prediction :

Table 2. The results of the temporal segment prediction.

Team	Run ID	IoU=0.3	IoU=0.5	IoU=0.7	mIoU
UNCWAI	run-1.json	10	7.5	0	9.32
UNCWAI	run-3.json	25	10	5	15.78
UNCWAI	run-2.json	42.5	32.5	22.5	31.37
VPAI	run-1.json	57.5	35	25	39.97
MI_TJU	run-1.json	**67.5**	**62.5**	**50**	**55.24**

Advantages

- Use the information of different modals
- Reduce the cost
- Guarantee the accuracy
- ...

Conclusion

- An efficient video retrieval method
- A localization method (cross-modal representations)
- Highest results in two subtasks

For the future

- From localization to question-answering?
- Some videos in corpus may not be publicly visible

Thank you for your attention!