

# On Demand Article Generation of Events in Real Time

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# On Demand Article Generation

Can you tell me about the Notre-Dame Fire?

Sure!

On 15 April 2019, a structural fire broke out in the roof space of Notre-Dame de Paris, a medieval Catholic cathedral in Paris, France.

The fire destroyed the cathedral's wooden spire (flèche) and most of the wooden roof and severely damaged the cathedral's upper walls.

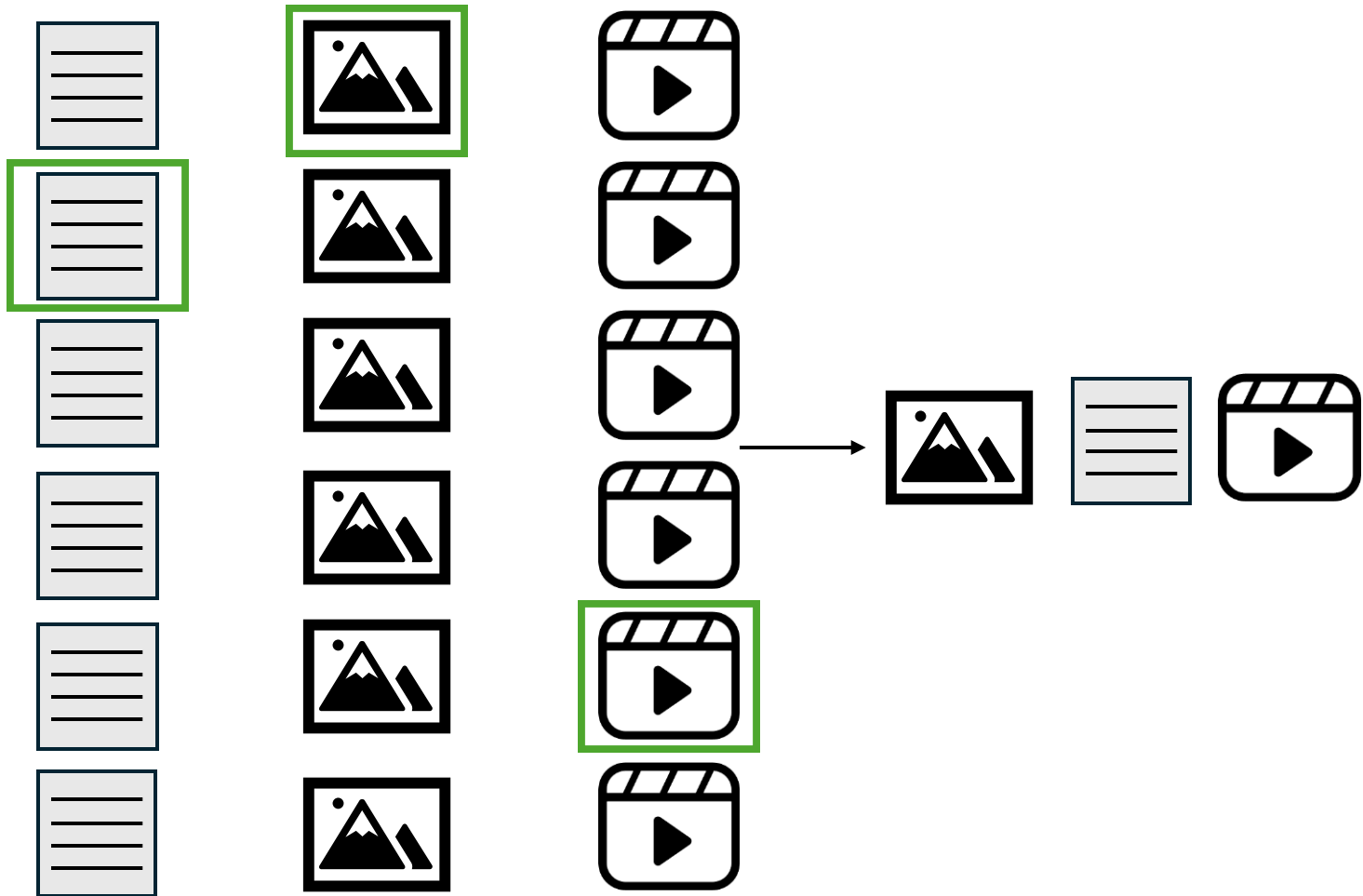
By September 2021, donors had contributed over €840 million to the rebuilding effort.[9]  
The cathedral reopened on 7 December 2024 after three years of reconstruction.[10][11]



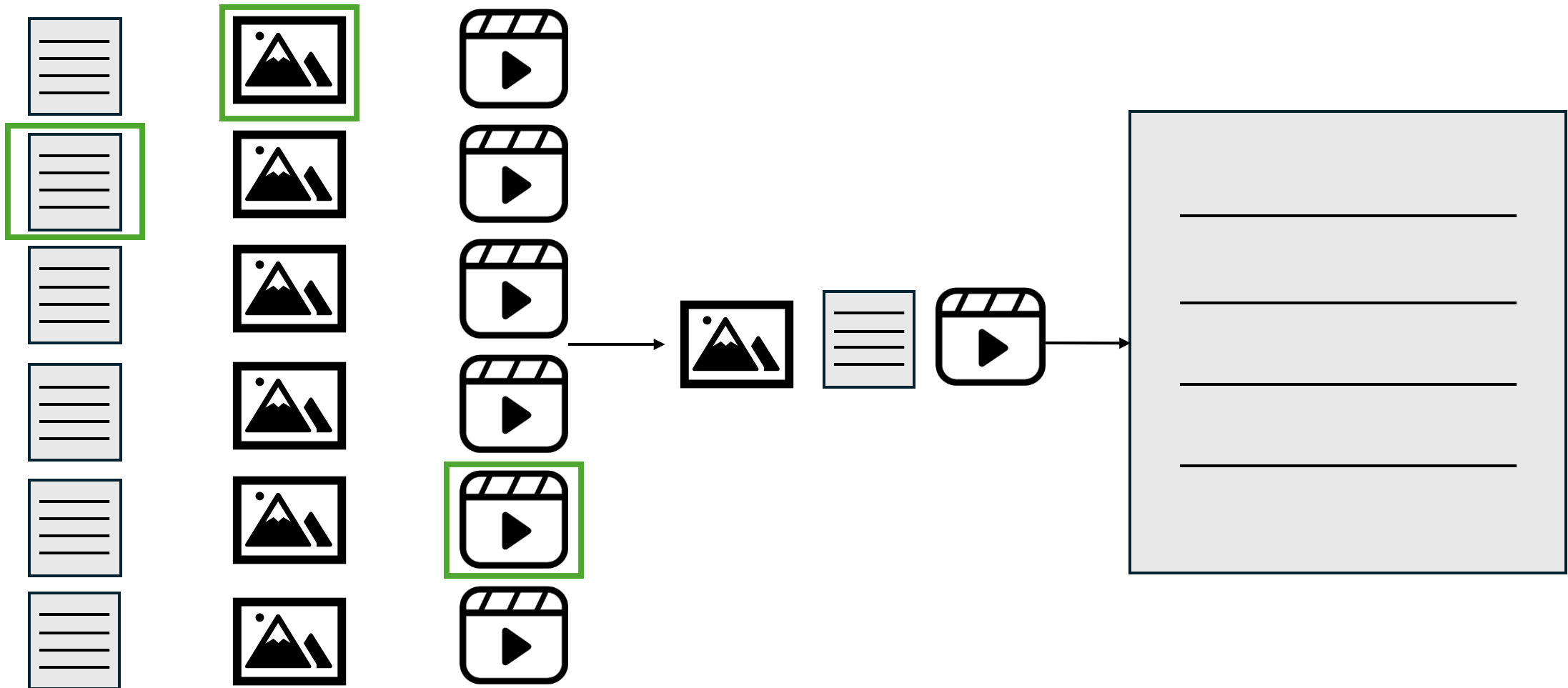
# How to write an article?



# How to write an article?



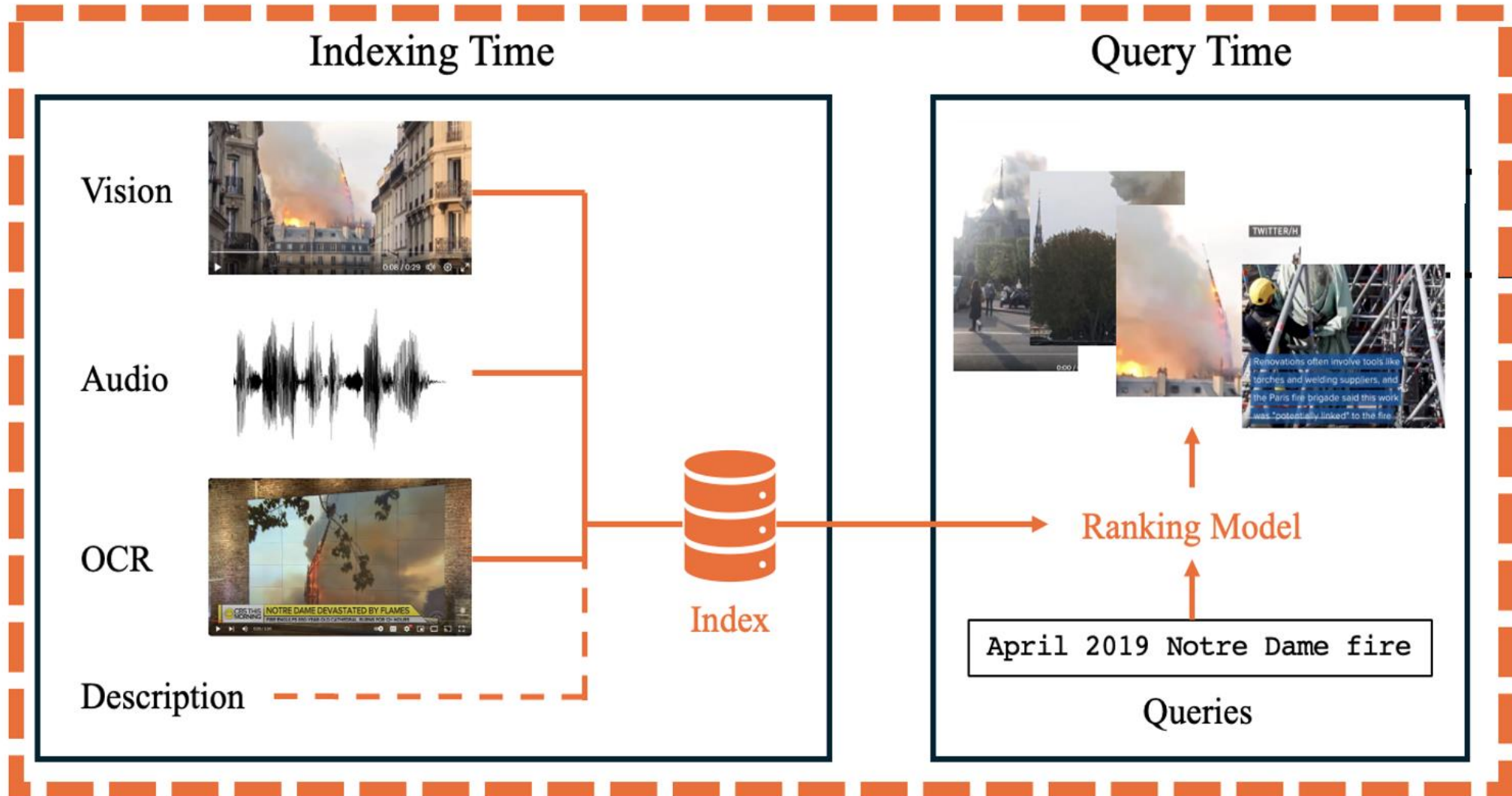
# How to write an article?



# Retrieval

Information Seeking

# Video Retrieval



# MultiVENT

Emergencies



Politics



Social Events



Science & Business





# MultiVENT

Emergencies



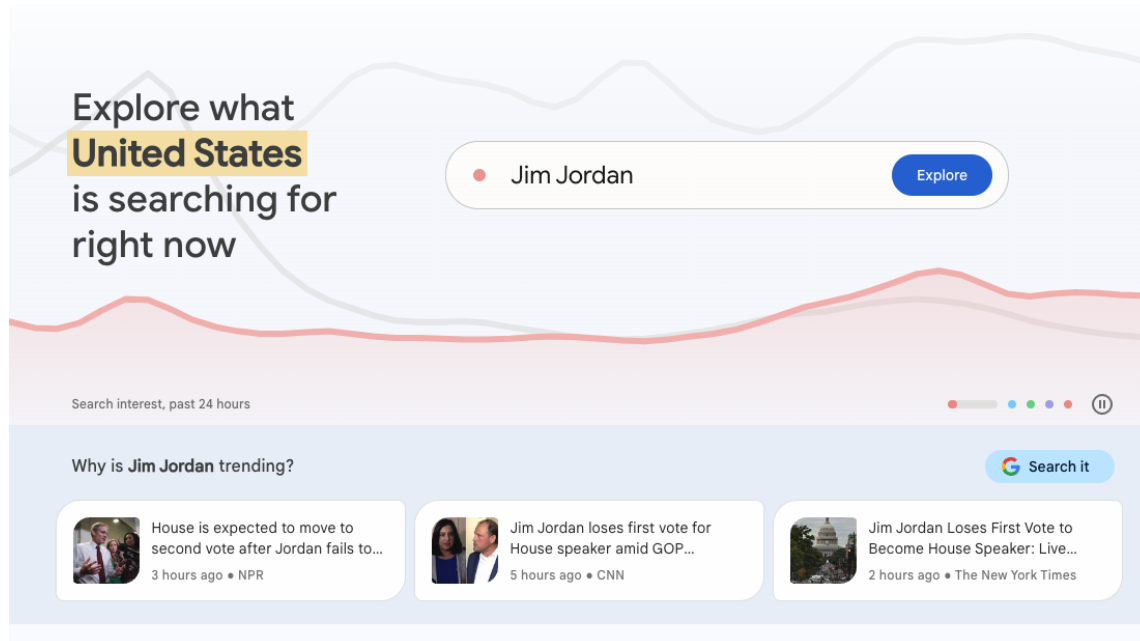
Politics



Social Events



Science & Business



# MultiVENT

## Emergencies



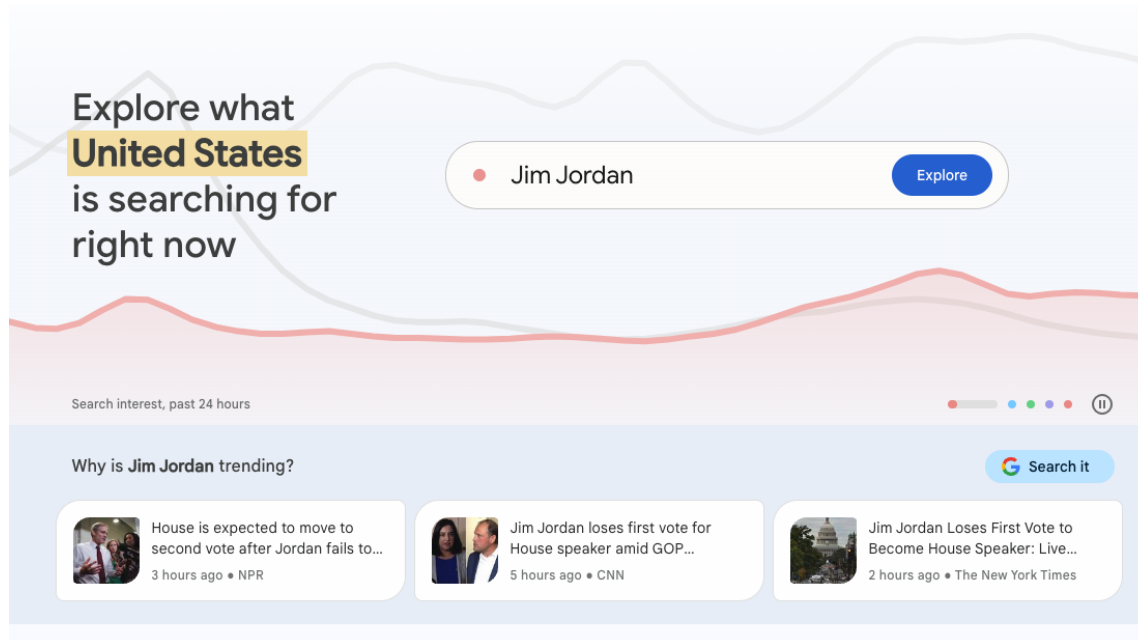
## Politics



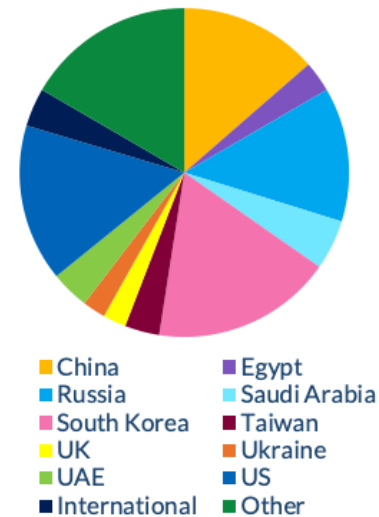
## Social Events



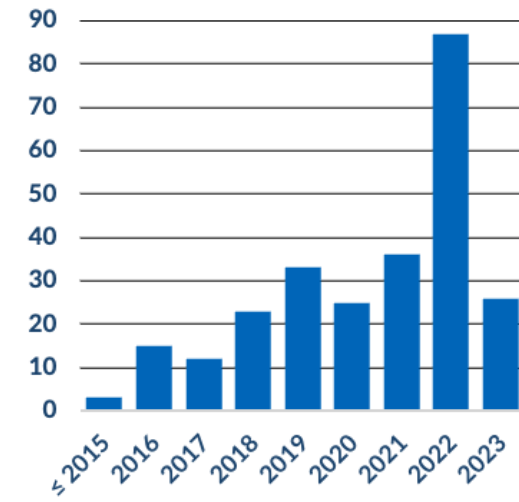
## Science & Business



## CURRENT EVENT LOCATIONS



## CURRENT EVENTS BY YEAR



# MultiVENT – Video Types

Easy

Hard



Professional

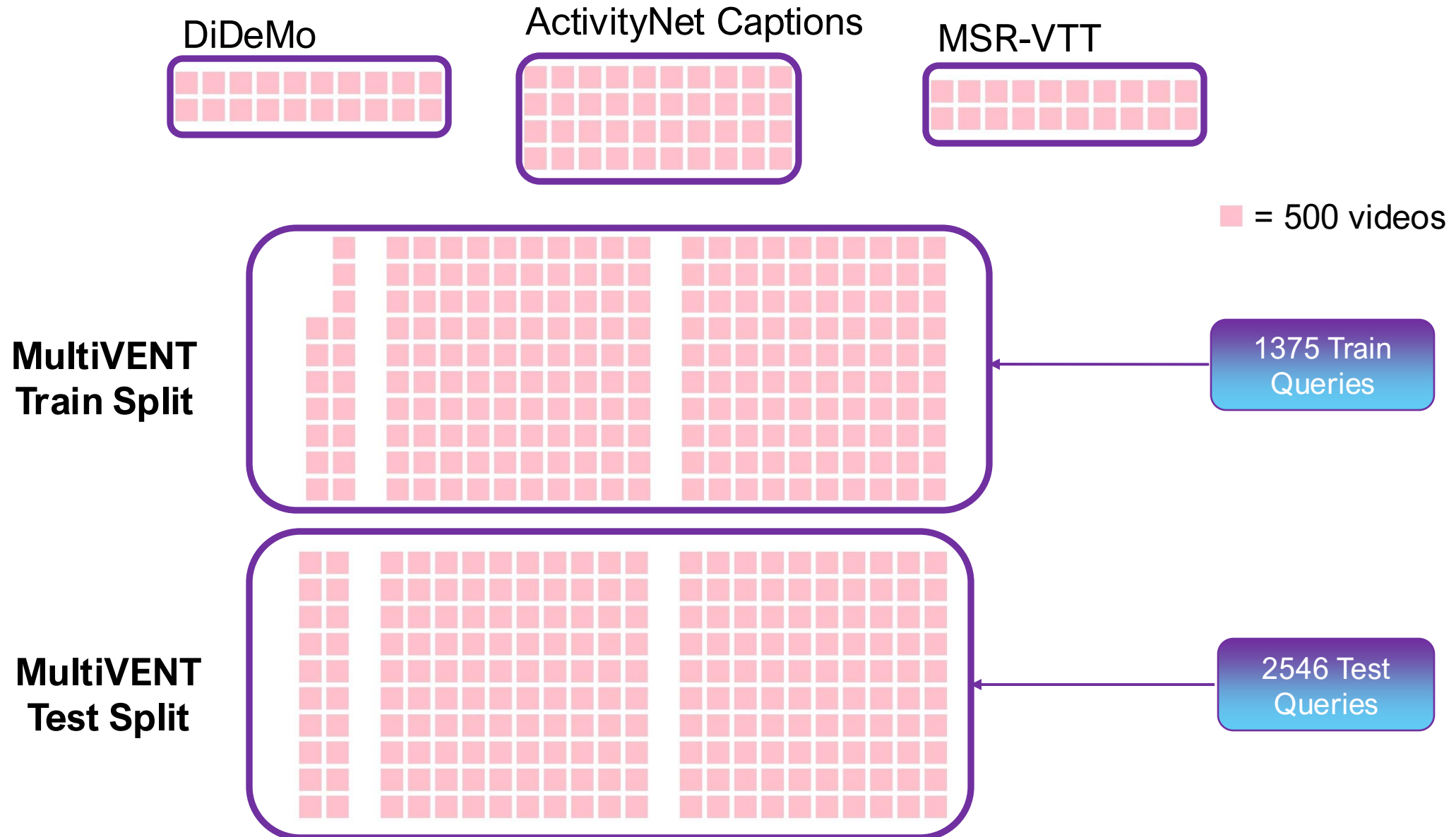


Edited

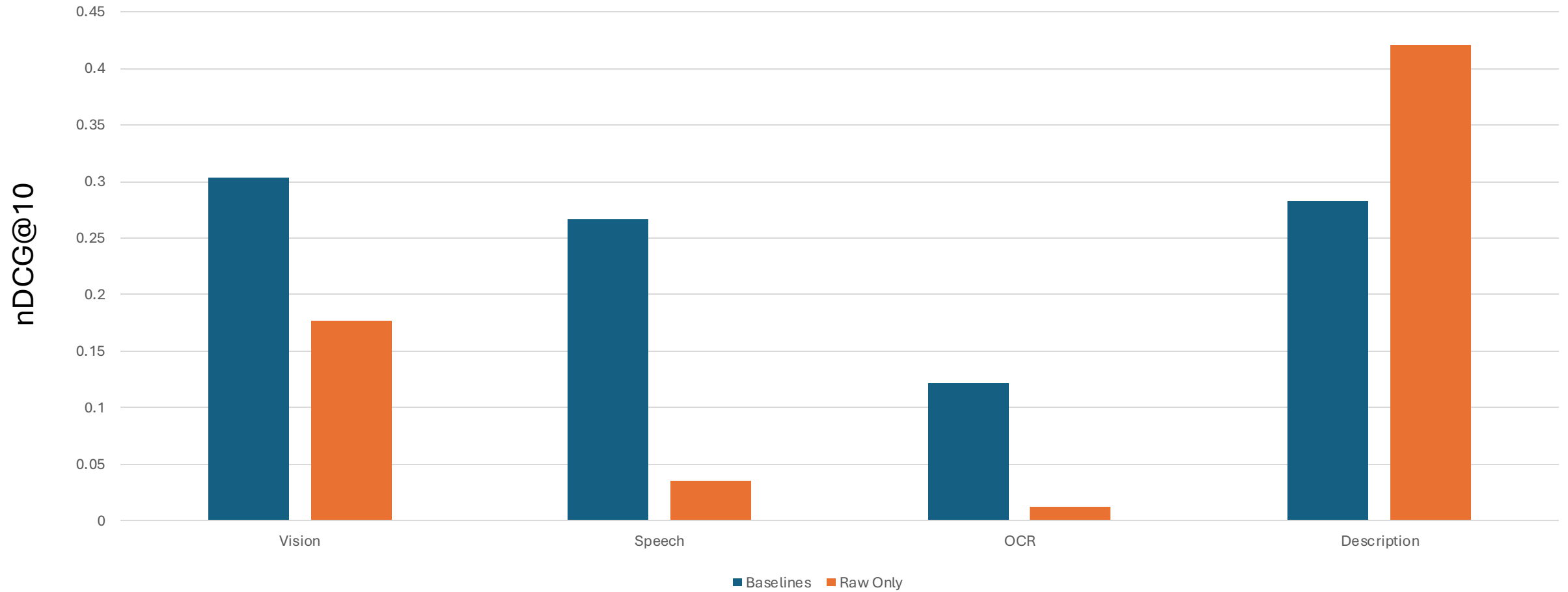


Raw Footage

# MultiVENT Size Comparison



# MultiVENT Baselines



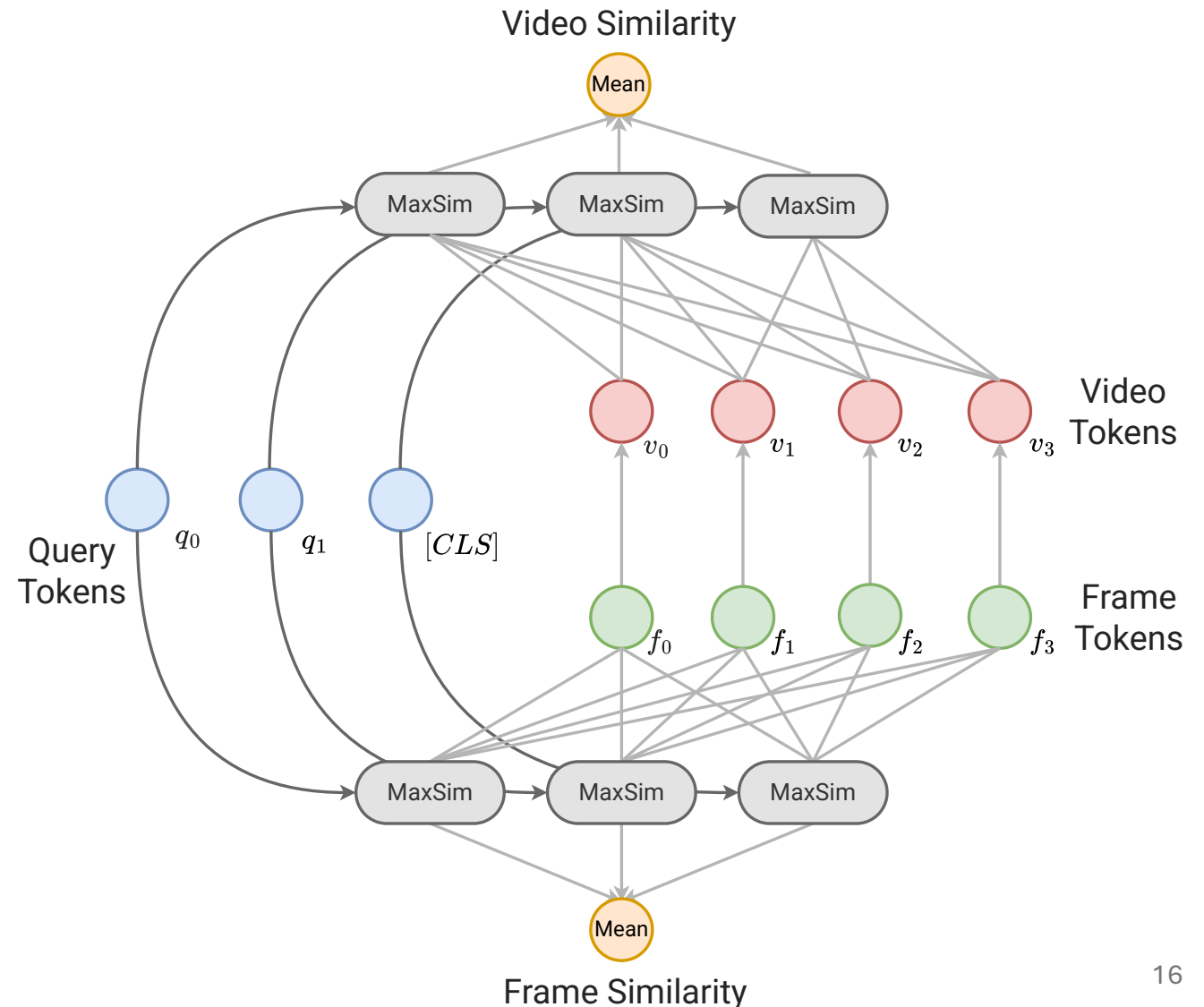


# Current Limitations

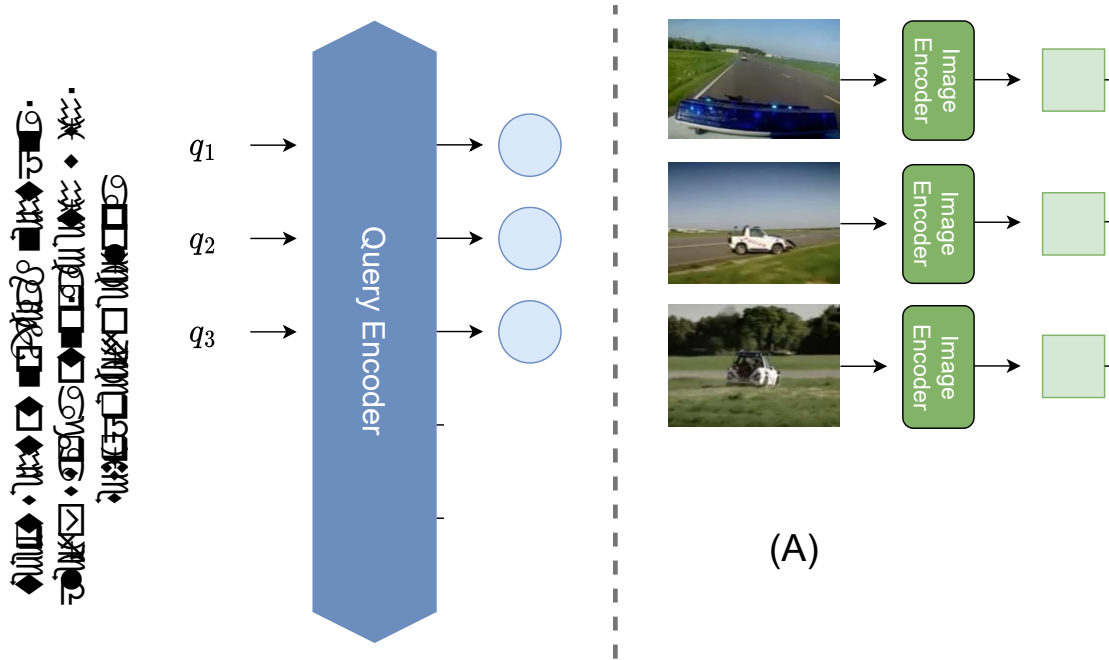
- Retrieval is not efficient
  - State of the art VideoLLMs are expensive to run on 109K+ videos
- Retrieval doesn't use multiple modalities
  - Most methods are vision only

# Video-ColBERT – Efficient Video Retrieval

- Can we do video retrieval similar to SOTA text? (multi-vector sim)
- What will be the performance trade off compared to expensive methods?
- Will it scale to 100K+ videos?

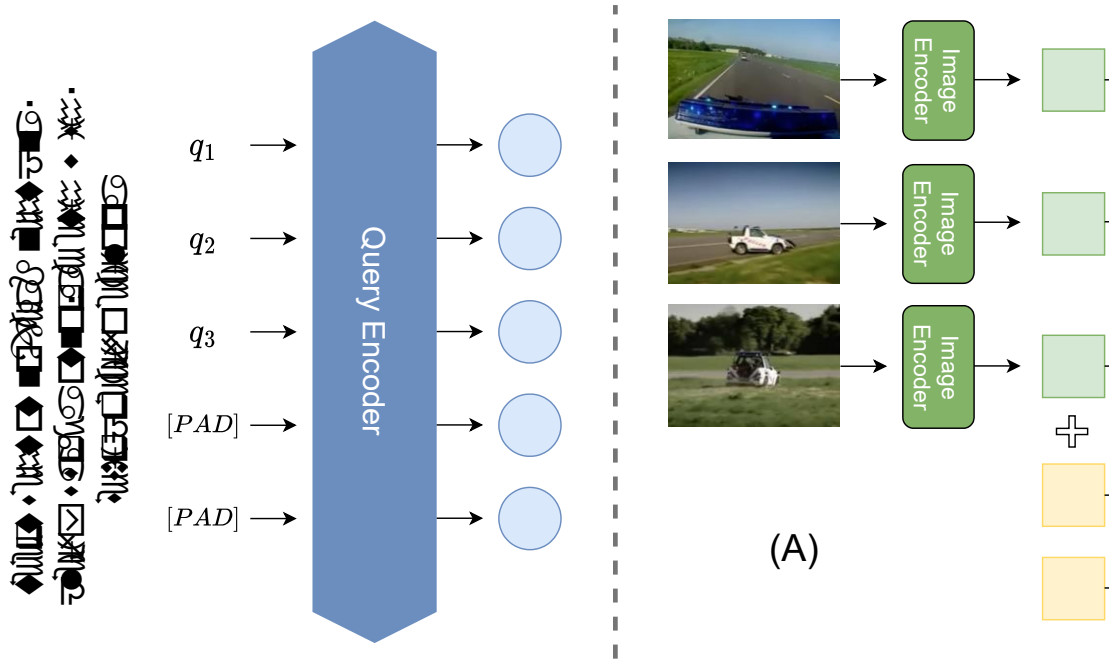


# Video-ColBERT – Efficient Video Retrieval

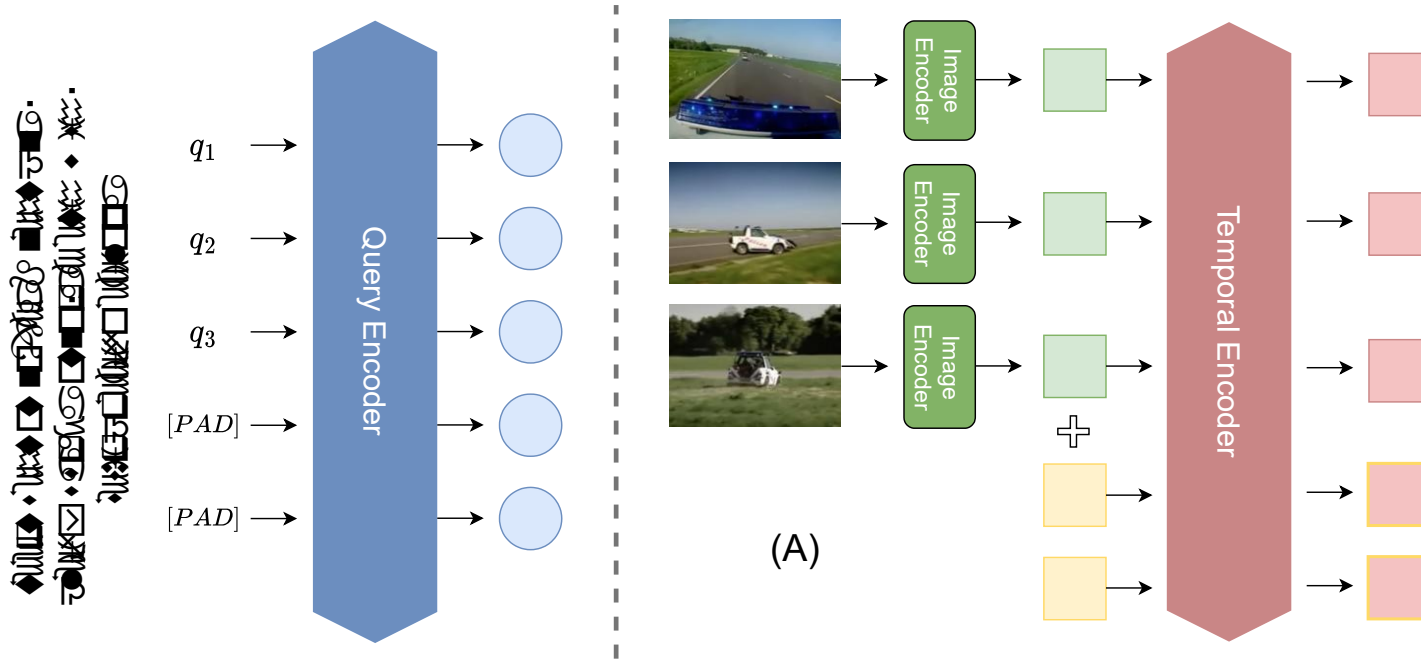




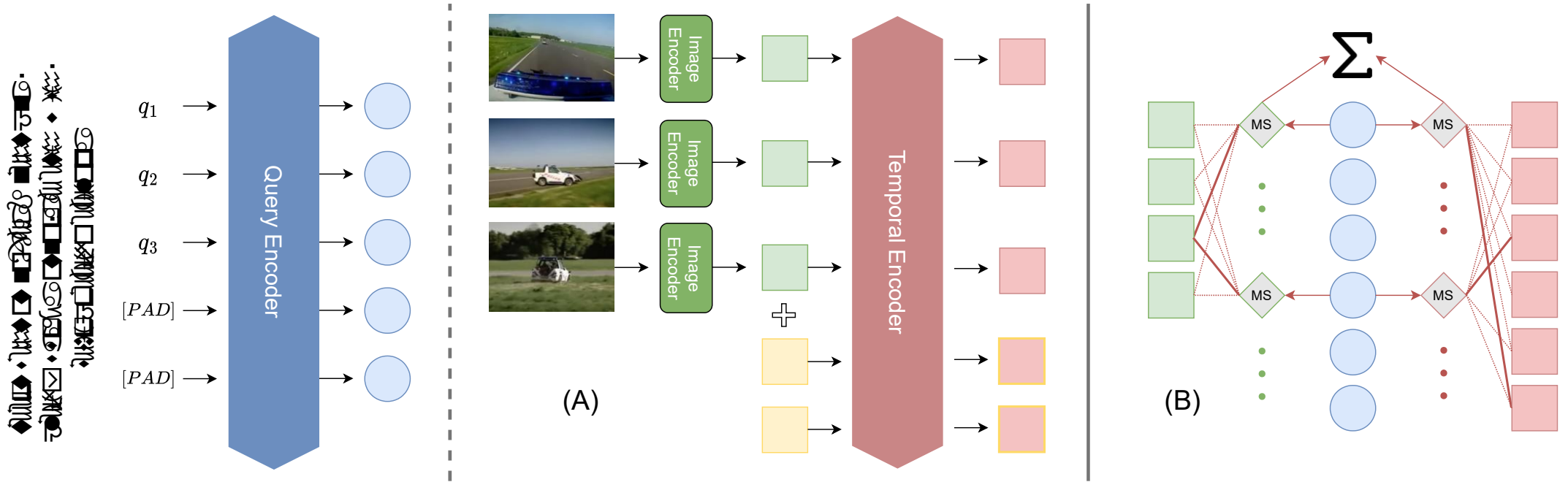
# Video-ColBERT – Efficient Video Retrieval



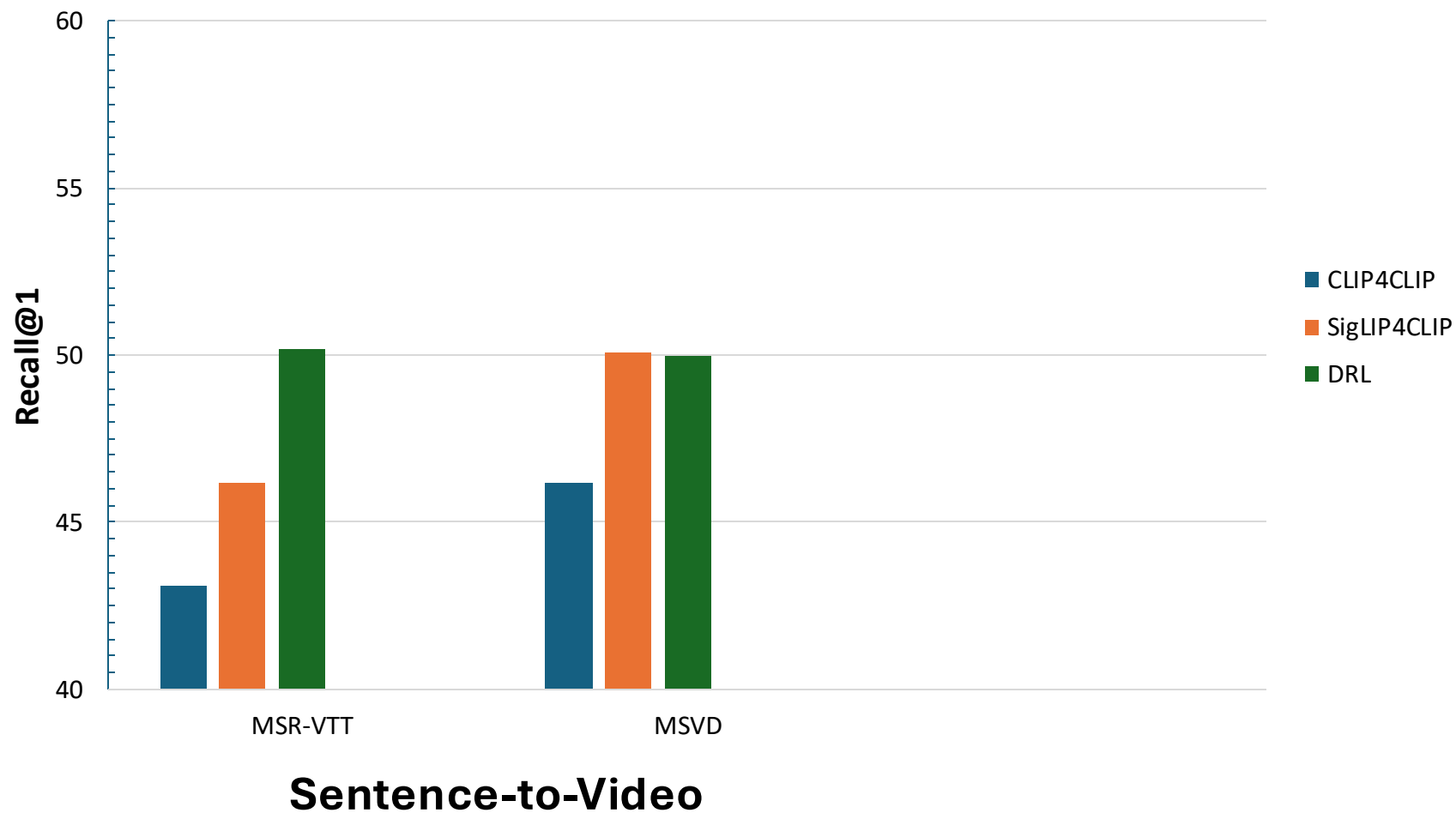
# Video-ColBERT – Efficient Video Retrieval



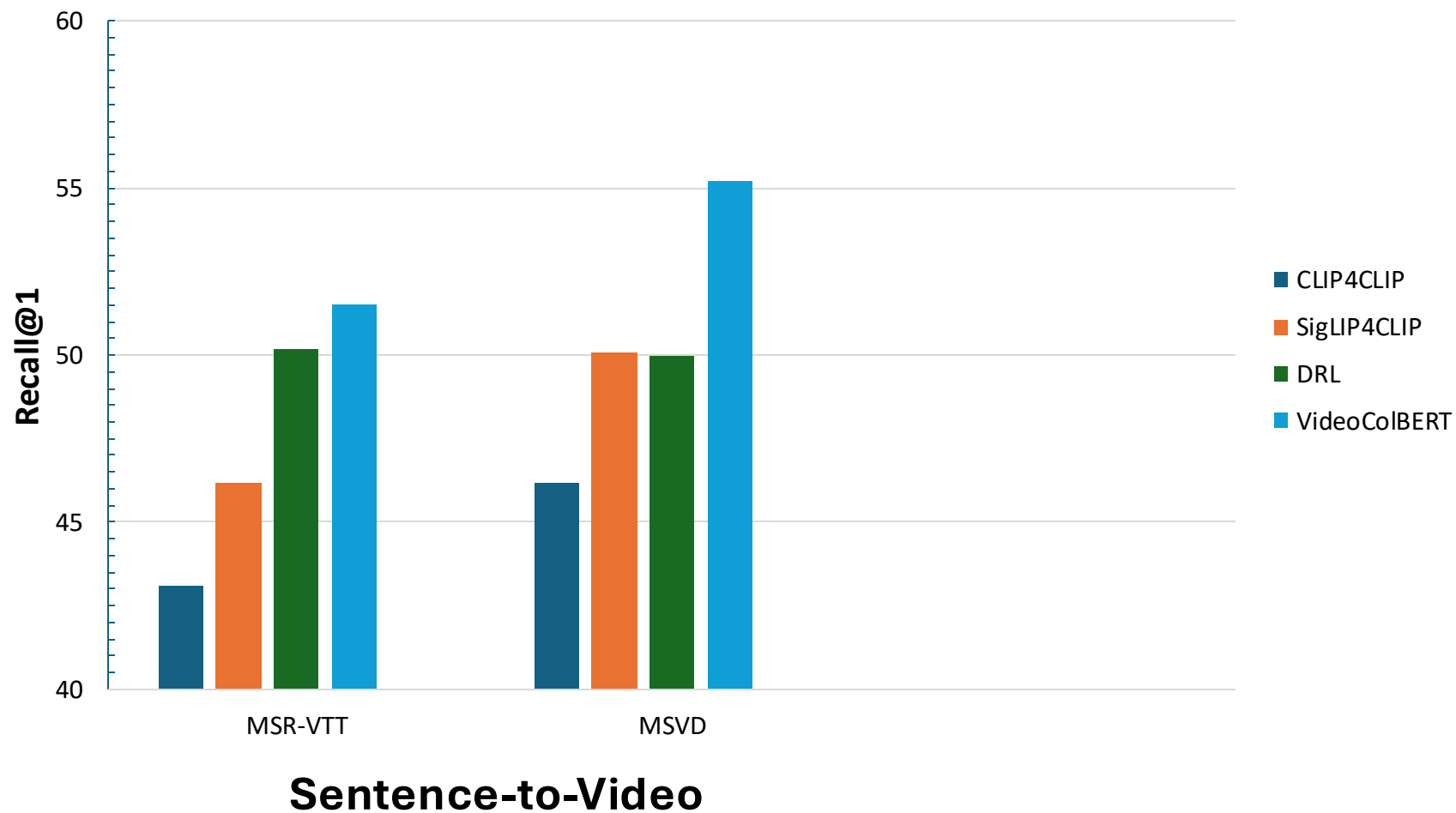
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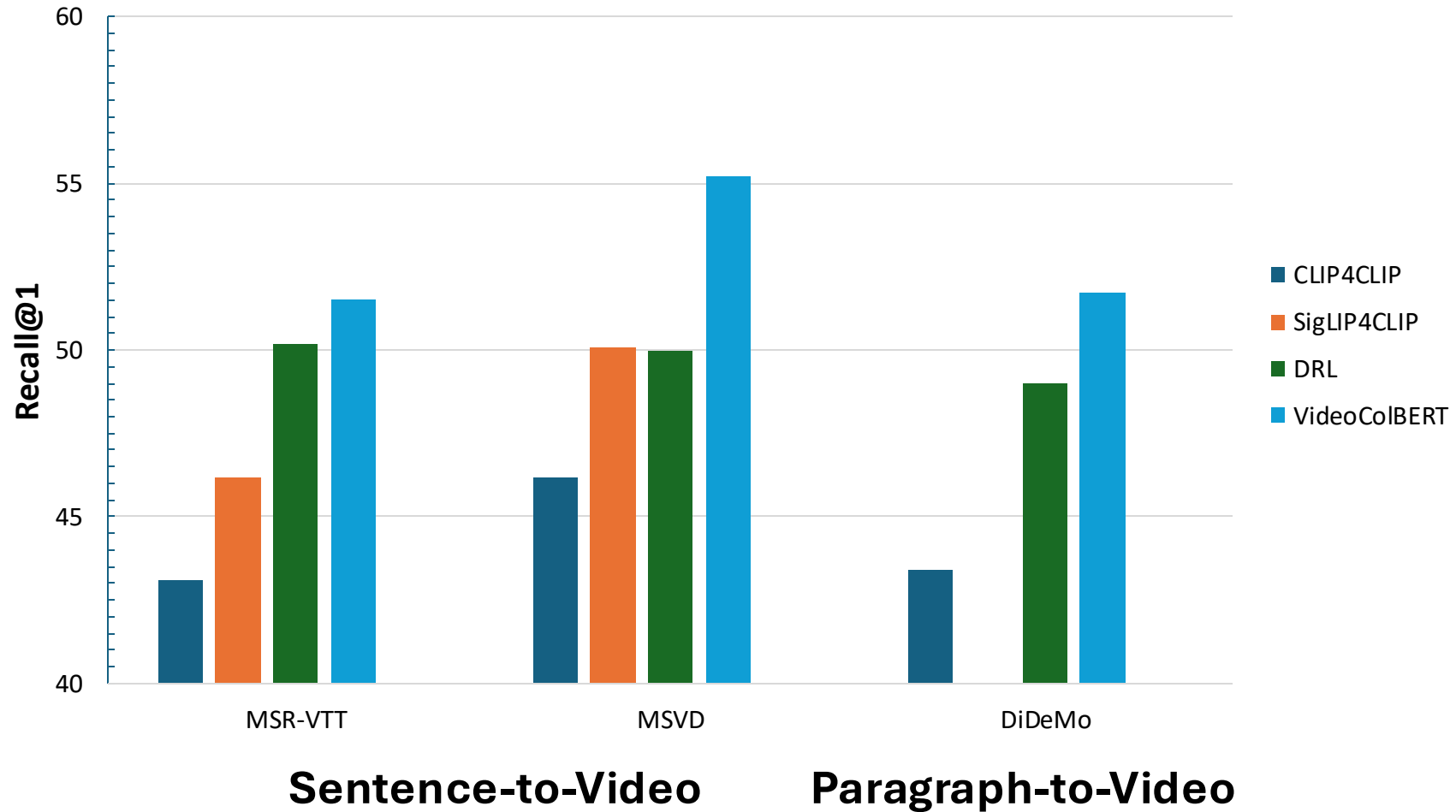
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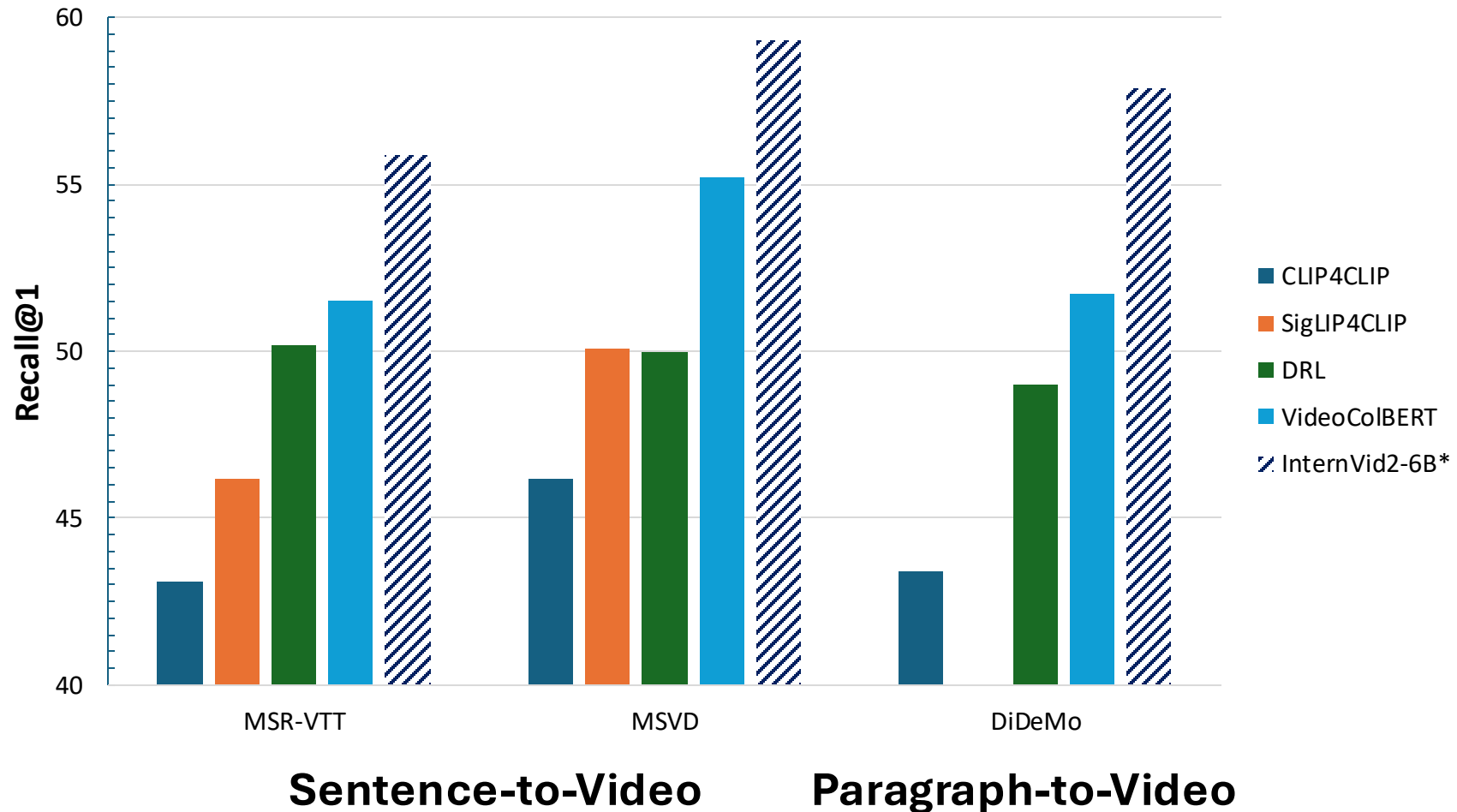
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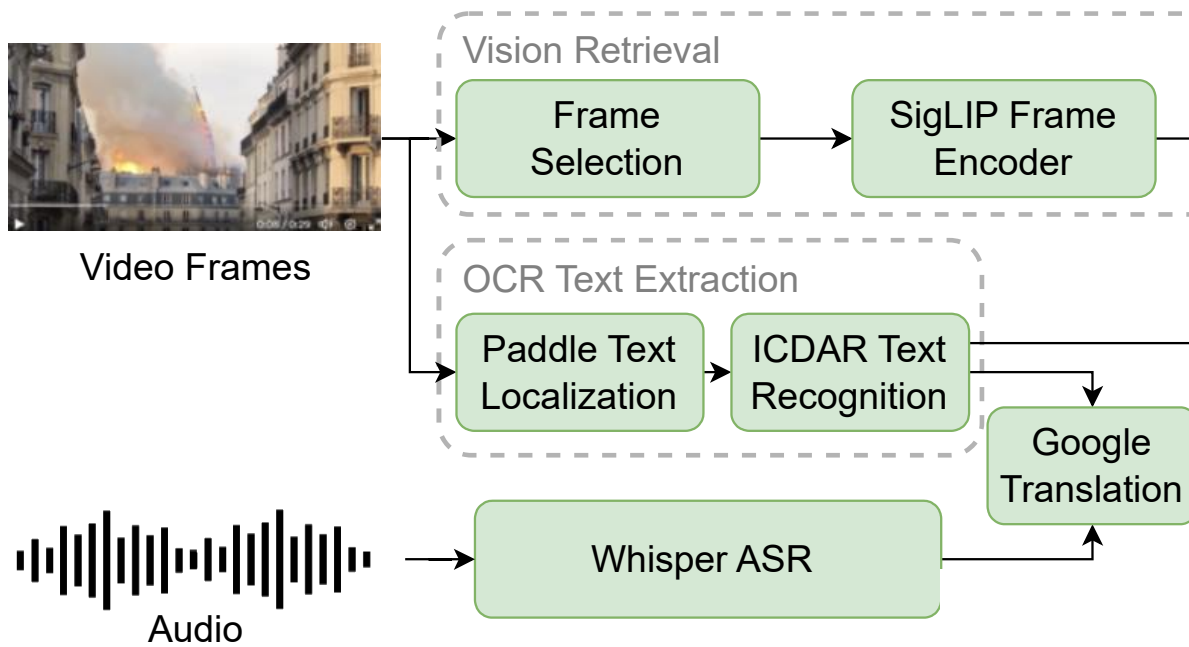
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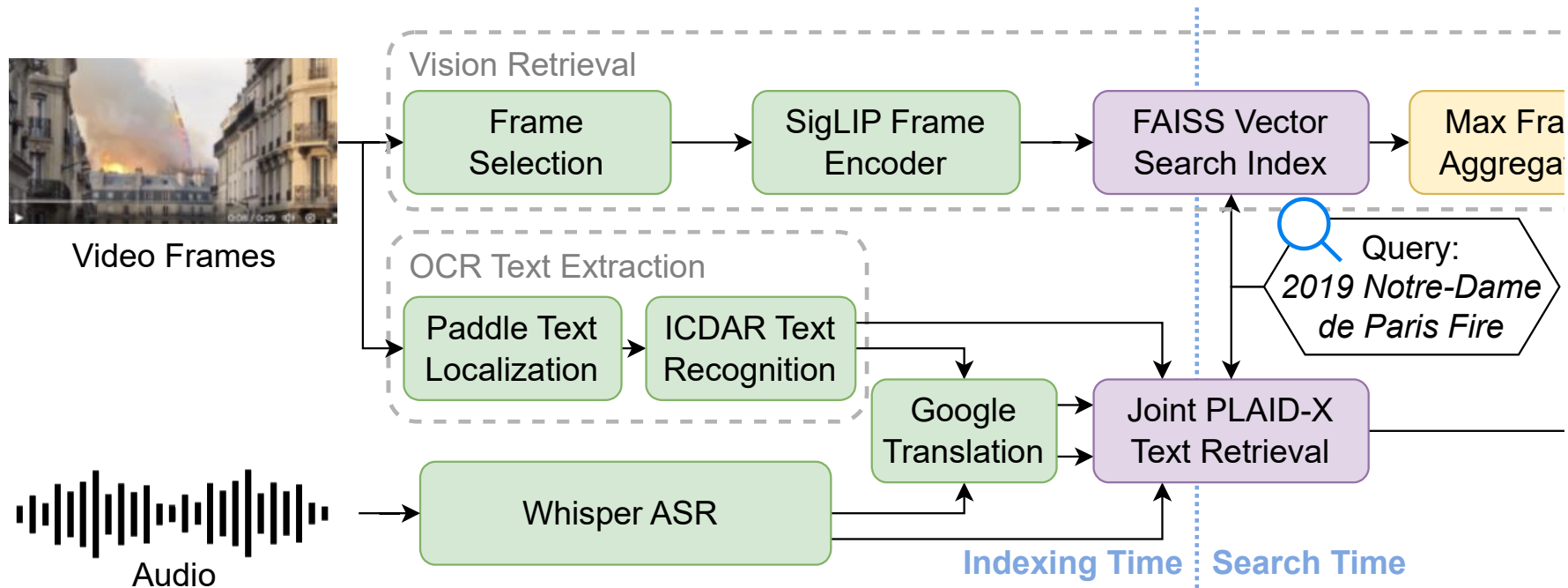


# Multimodal Reciprocal Rank Fusion

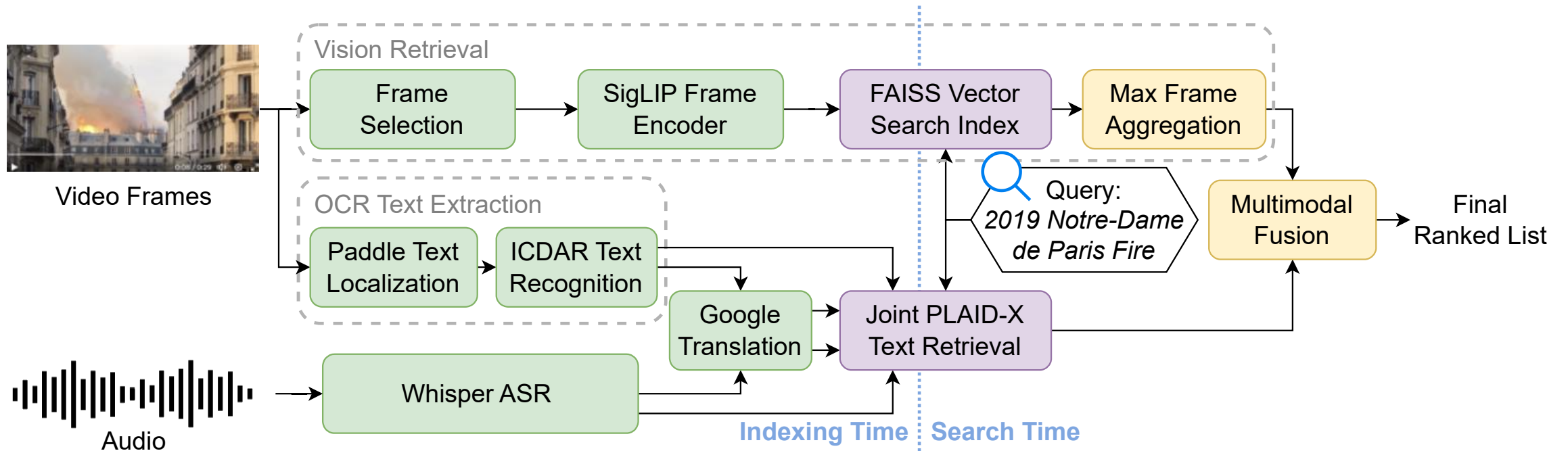




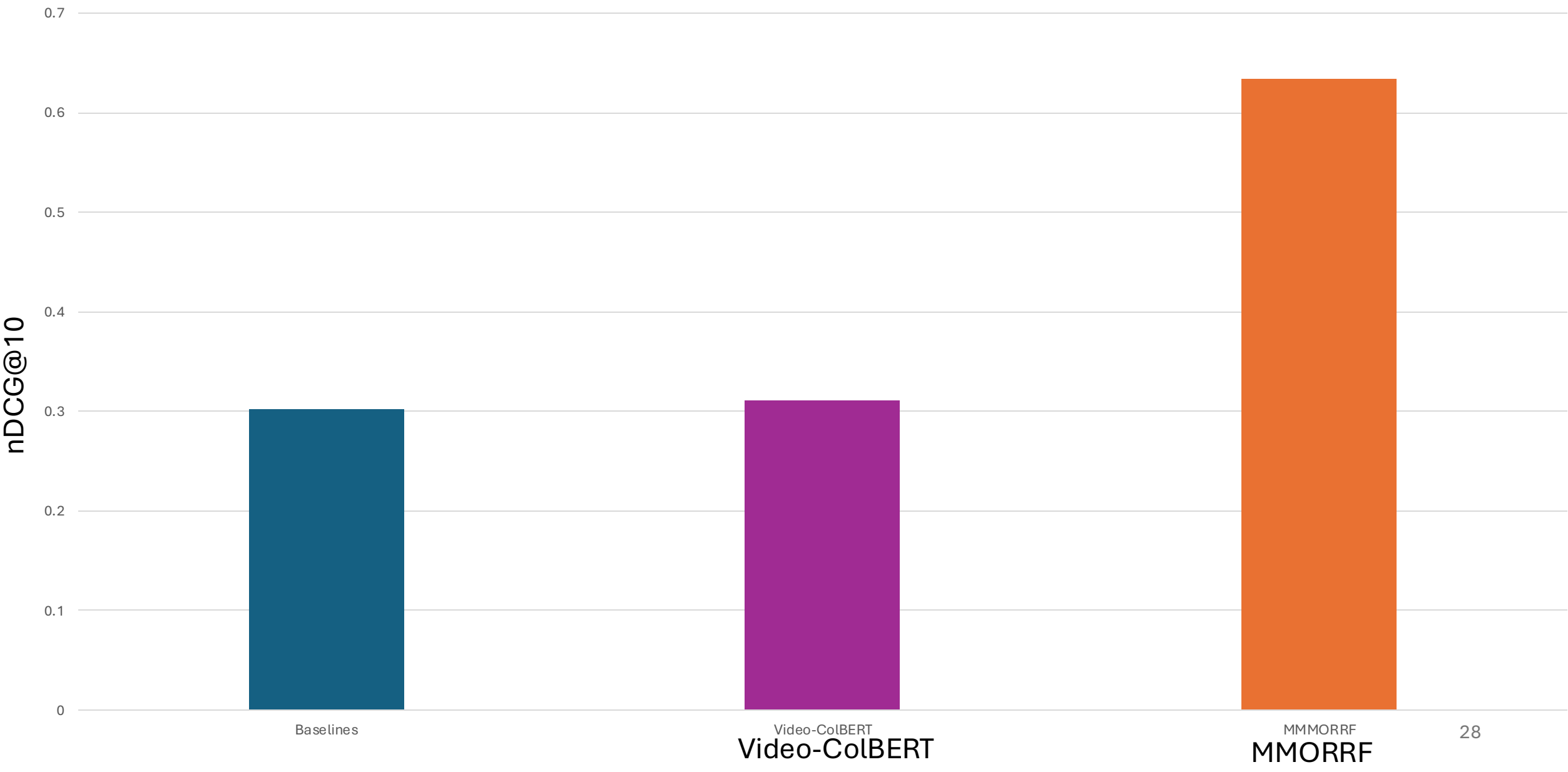
# Multimodal Reciprocal Rank Fusion



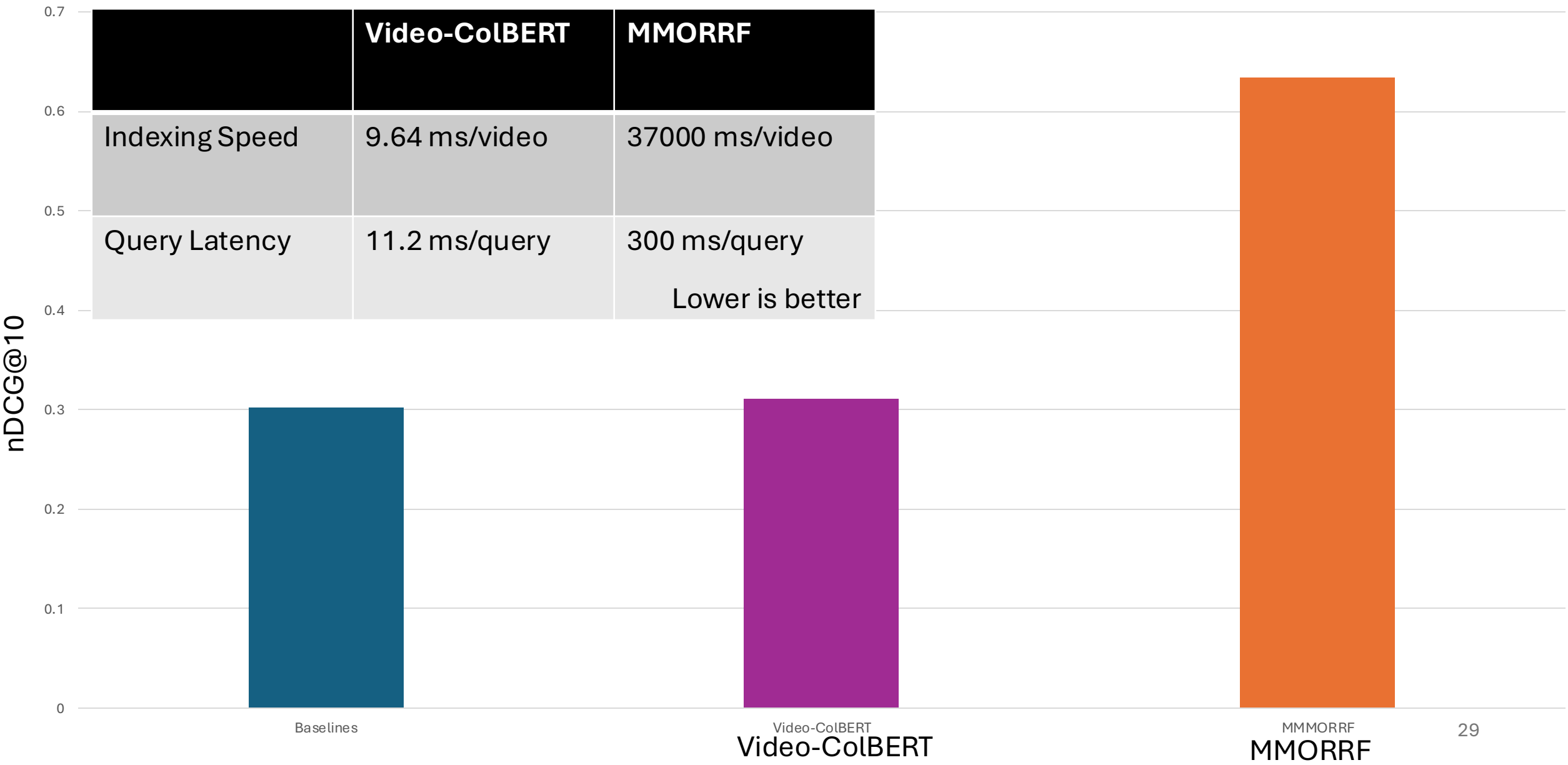
# Multimodal Reciprocal Rank Fusion



# MultiVENT Results



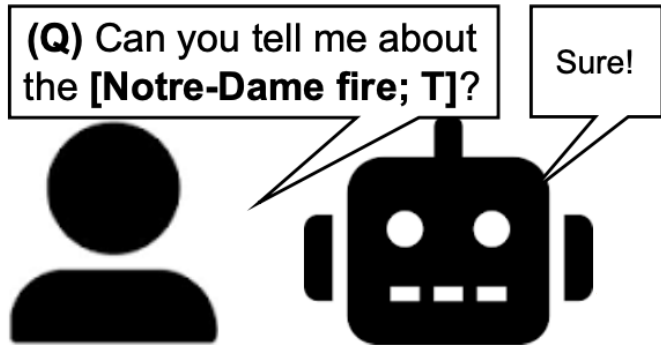
# MultiVENT Results



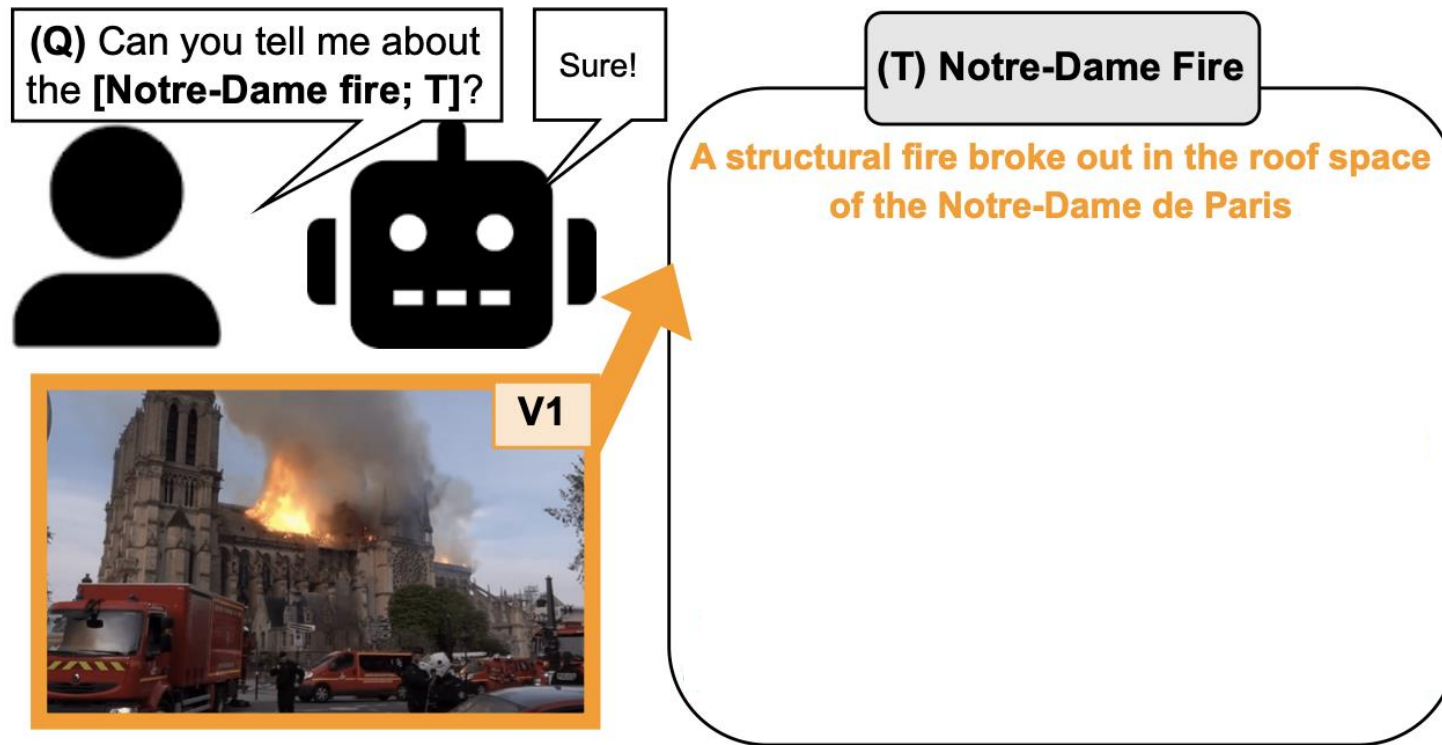
# Article Generation

Information Synthesis

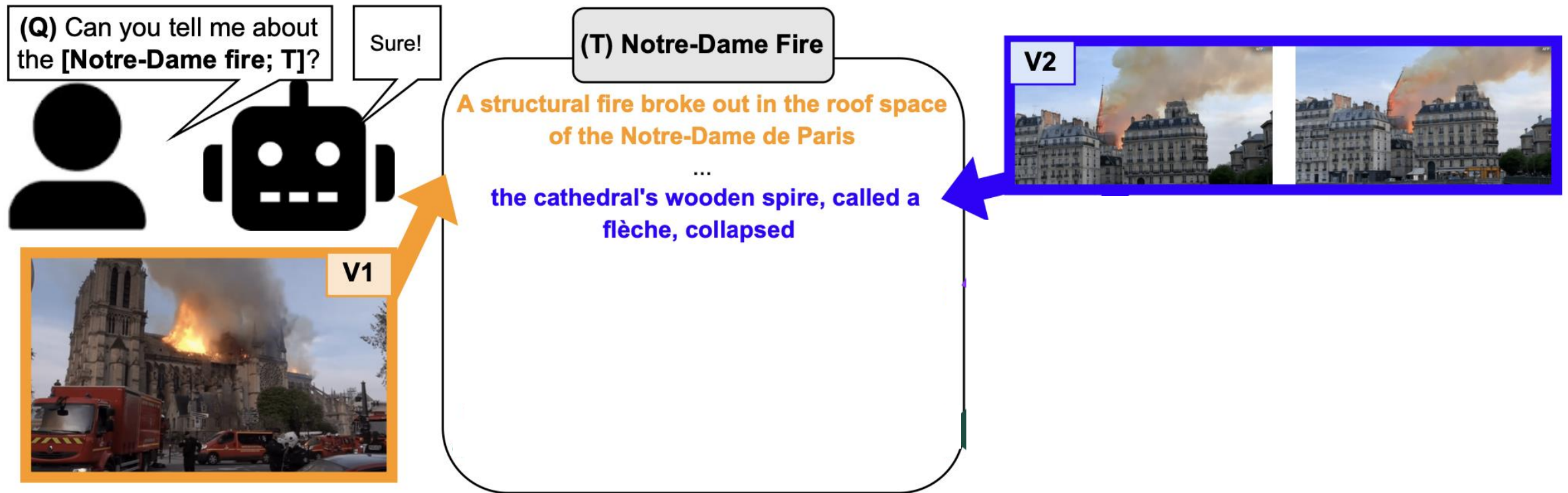
# WikiVideo: Article Generation from Multiple Videos



# WikiVideo: Article Generation from Multiple Videos

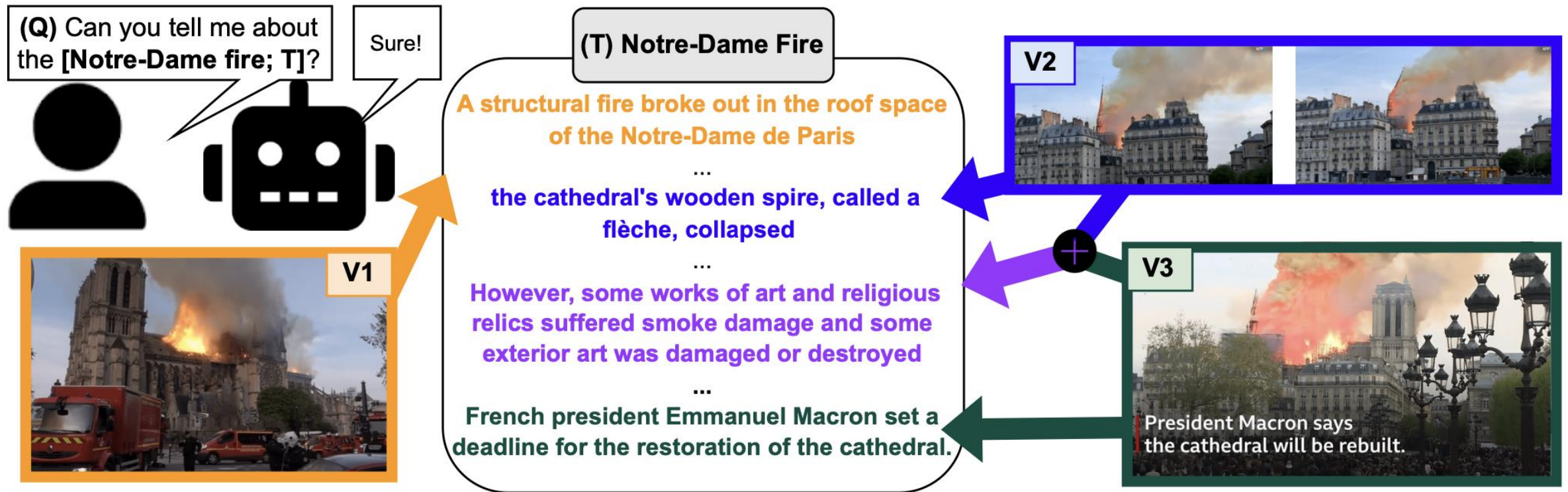


# WikiVideo: Article Generation from Multiple Videos





# WikiVideo: Article Generation from Multiple Videos



# WikiVideo: Collection Process

## Notre-Dame fire

57 languages

ArticleTalk

ReadEditView historyTools

From Wikipedia, the free encyclopedia

Coordinates: 48°53′N 2°35′E﻿ / ﻿48.8530°N 2.3500°E﻿ / 48.8530; 2.3500

On 15 April 2019, at 18:18 [CEST](#), a [structural fire](#) broke out in the roof space of [Notre-Dame de Paris](#), a medieval Catholic [cathedral](#) in [Paris](#), France.

The fire, which investigators believe was started by a cigarette or an electrical short circuit,<sup>[5]</sup> destroyed [the cathedral's wooden spire \(flèche\)](#) and most of the wooden roof and severely damaged the cathedral's upper walls. The [vaulted](#) stone ceiling largely contained the burning roof as it collapsed, preventing extensive damage to the interior. Many works of art and religious relics were moved to safety, but others suffered smoke damage, and

### Notre-Dame fire



Notre-Dame de Paris aflame as seen from [Square René-Viviani](#)

# WikiVideo: Collection Process



**1** On 15 April 2019, at 18:18 CEST, a structural fire broke out in the roof space of Notre-Dame de Paris, a medieval Catholic cathedral in Paris, France.

A structural fire broke out.

☐ AUDIO ☐ VIDEO ☐ OCR ☐ NONE

The fire broke out on 15 April 2019.

☐ AUDIO ☐ VIDEO ☐ OCR ☐ NONE

The fire broke out just before 18:20 CEST.

☐ AUDIO ☐ VIDEO ☐ OCR ☐ NONE

The fire broke out in the roof space of Notre-Dame de Paris.

☐ AUDIO ☐ VIDEO ☐ OCR ☐ NONE

Notre-Dame de Paris is a medieval Catholic cathedral.

☐ AUDIO ☐ VIDEO ☐ OCR ☐ NONE



# WikiVideo: Collection Process



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☐ AUDIO ☐ VIDEO ☐ OCR ☒ NONE

**2**

VIDEO CORPUS



# WikiVideo: Collection Process



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☐ AUDIO ☐ VIDEO ☒ OCR ☐ NONE

The fire broke out in the roof space of Notre-Dame de Paris.

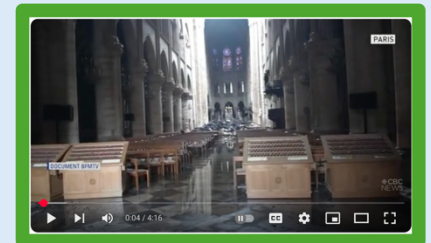
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Notre-Dame de Paris is a medieval Catholic cathedral.

☐ AUDIO ☐ VIDEO ☐ OCR ☒ NONE

**2**

VIDEO CORPUS



⋮

**3**

A structural fire broke out in the roof space of the Notre-Dame de Paris, a medieval Catholic cathedral in Paris, France. By the time the fire was extinguished, the cathedral's wooden spire, called a fleche, collapsed, most of the wooden roof had been destroyed, and the cathedral's upper walls were severely damaged. Extensive damage...

# WikiVideo: VideoLLM Performance

## QwenVL2.5 Output

The video depicts a catastrophic fire engulfing a historic cathedral, likely Notre-Dame in Paris, France. The flames are intense and widespread, with thick smoke billowing into the sky. The iconic spire of the cathedral is visibly on fire, with the structure glowing red from the heat. As the fire rages, the spire begins to weaken and eventually collapses, sending a cascade of debris downward. The surrounding buildings and trees are partially obscured by the smoke, emphasizing the scale and severity of the blaze. The scene is both dramatic and tragic, capturing a moment of significant destruction to a beloved landmark.

# WikiVideo: VideoLLM Performance

Recognizes  
key entities



## QwenVL2.5 Output

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# WikiVideo: VideoLLM Performance

Recognizes the underlying event 'fire'



## QwenVL2.5 Output

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# WikiVideo: VideoLLM Performance

Recognizes  
key subevents



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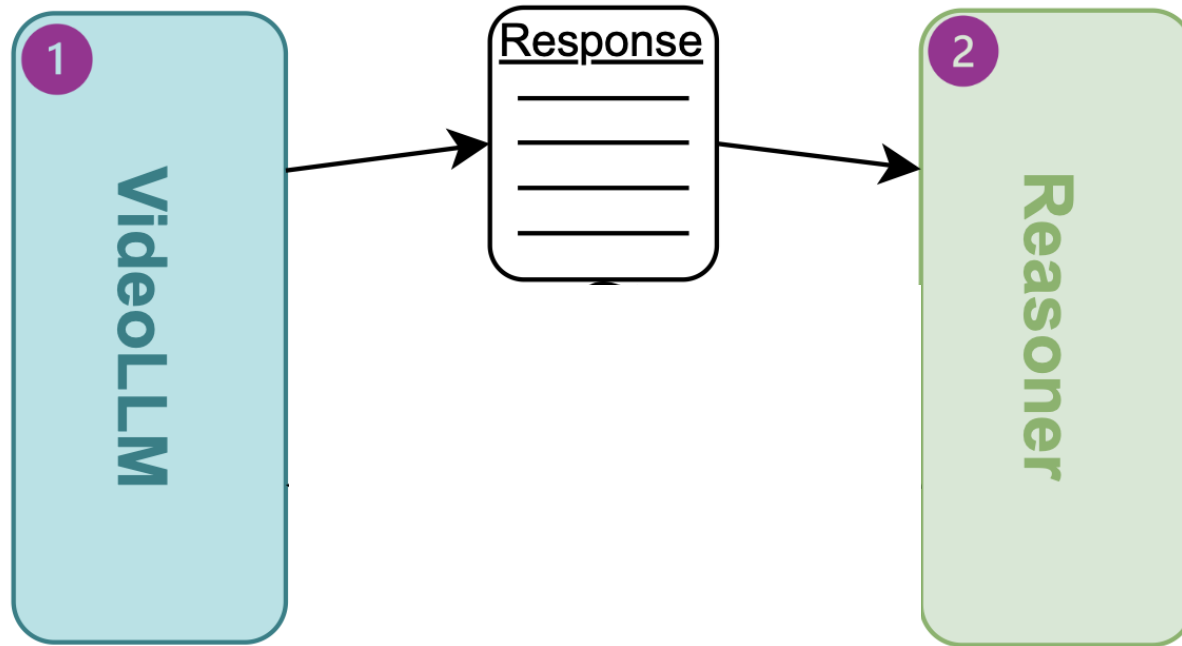
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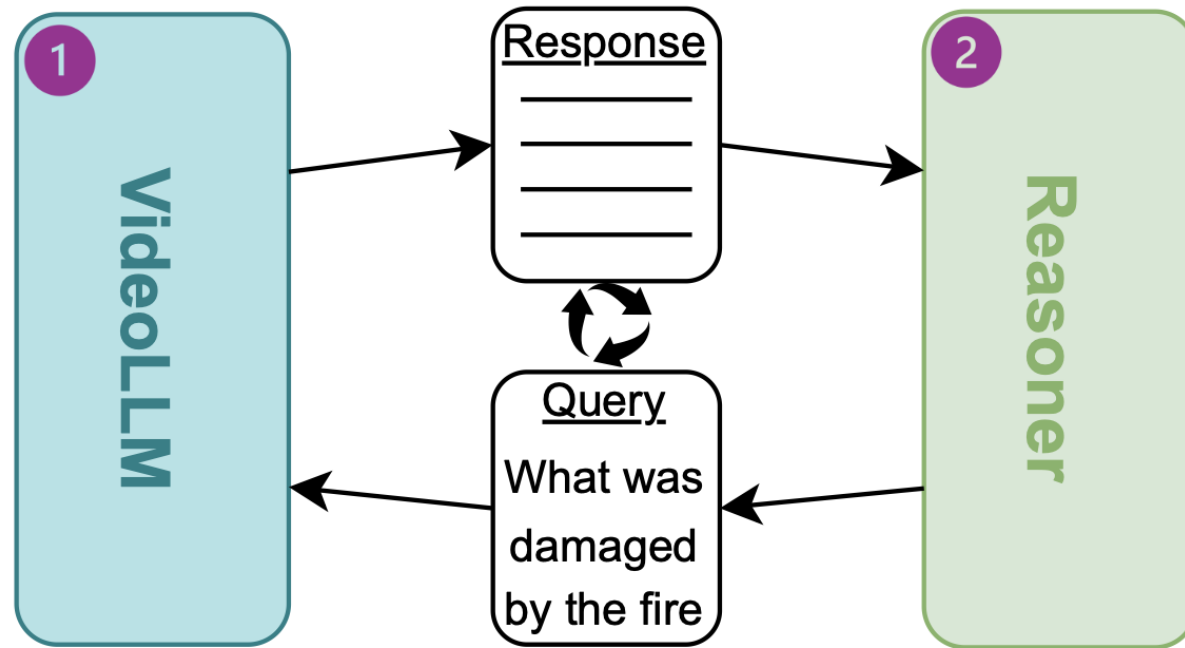
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**FAILS TO DRAW “HIGHER-LEVEL” INFERENCES**

# WikiVideo: Collaborative Article Generation

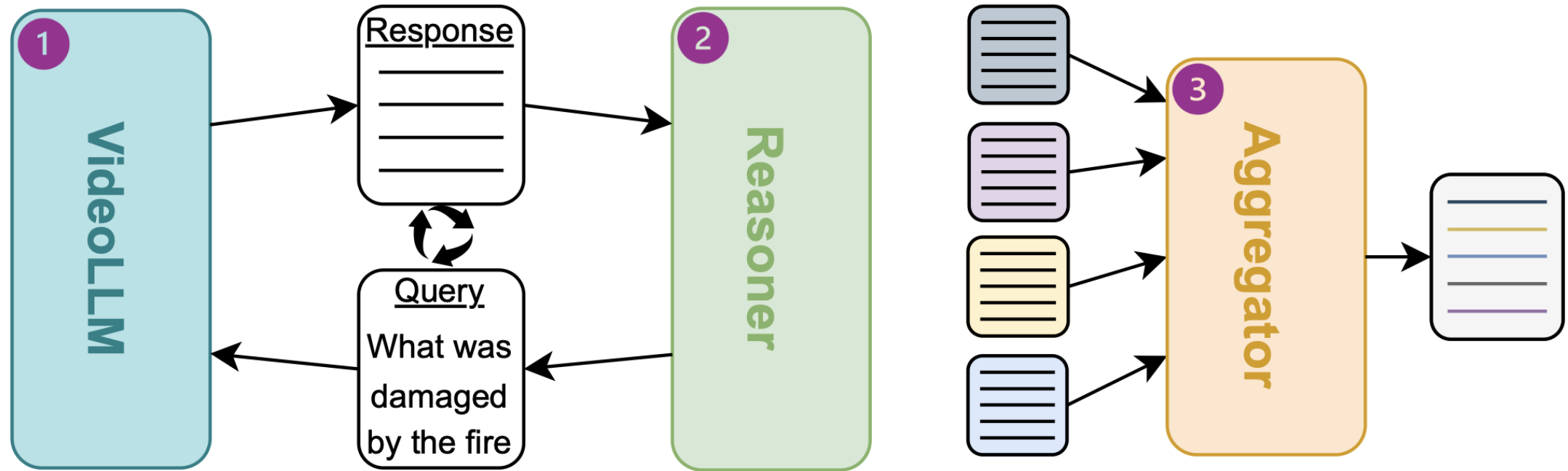


# WikiVideo: Collaborative Article Generation



**A** **<think>** What new query can I think of to help me find more information about the Notre-Dame fire?... The video shows... Considering all this, I think a good follow-up would focus on the extent of the damage **</think>**

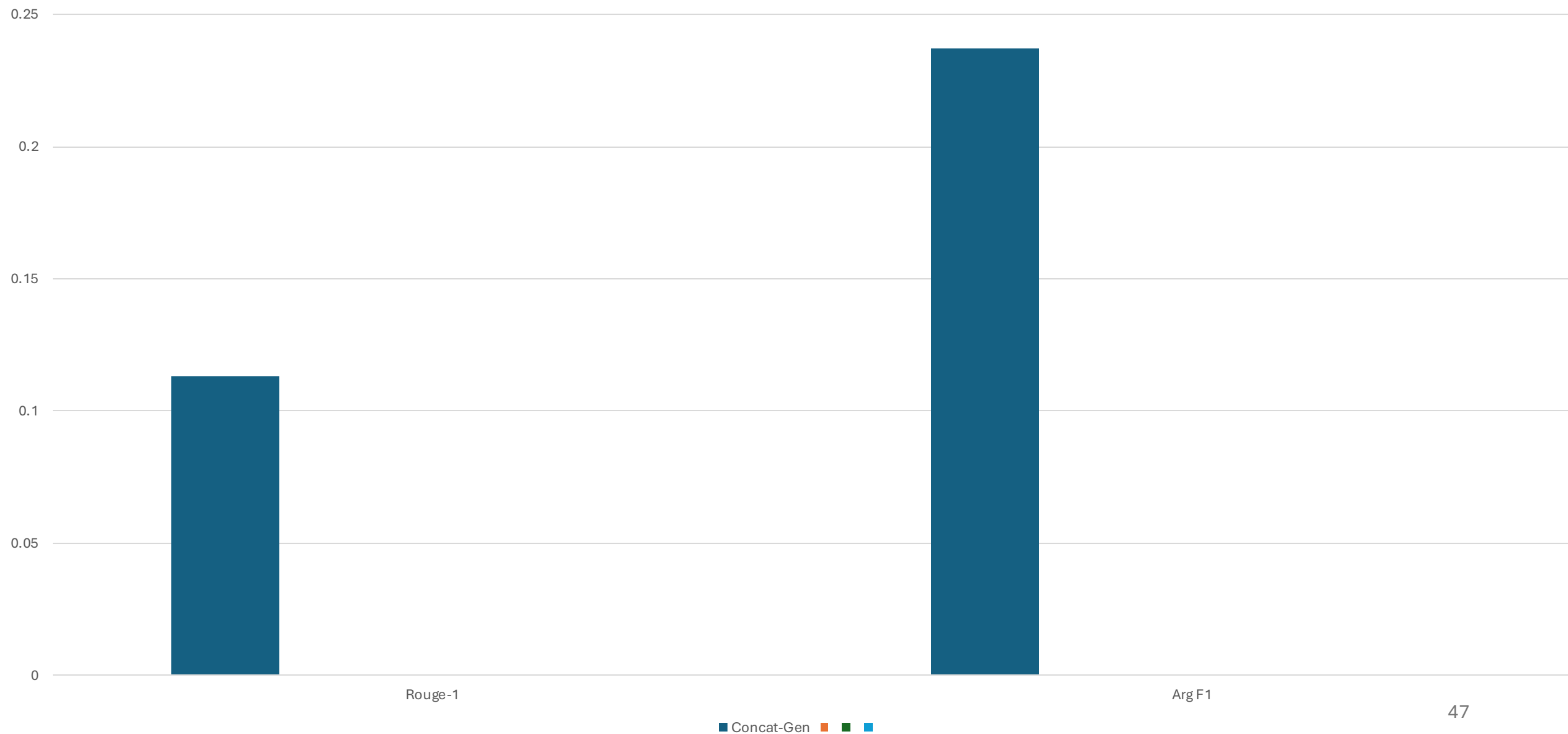
# WikiVideo: Collaborative Article Generation



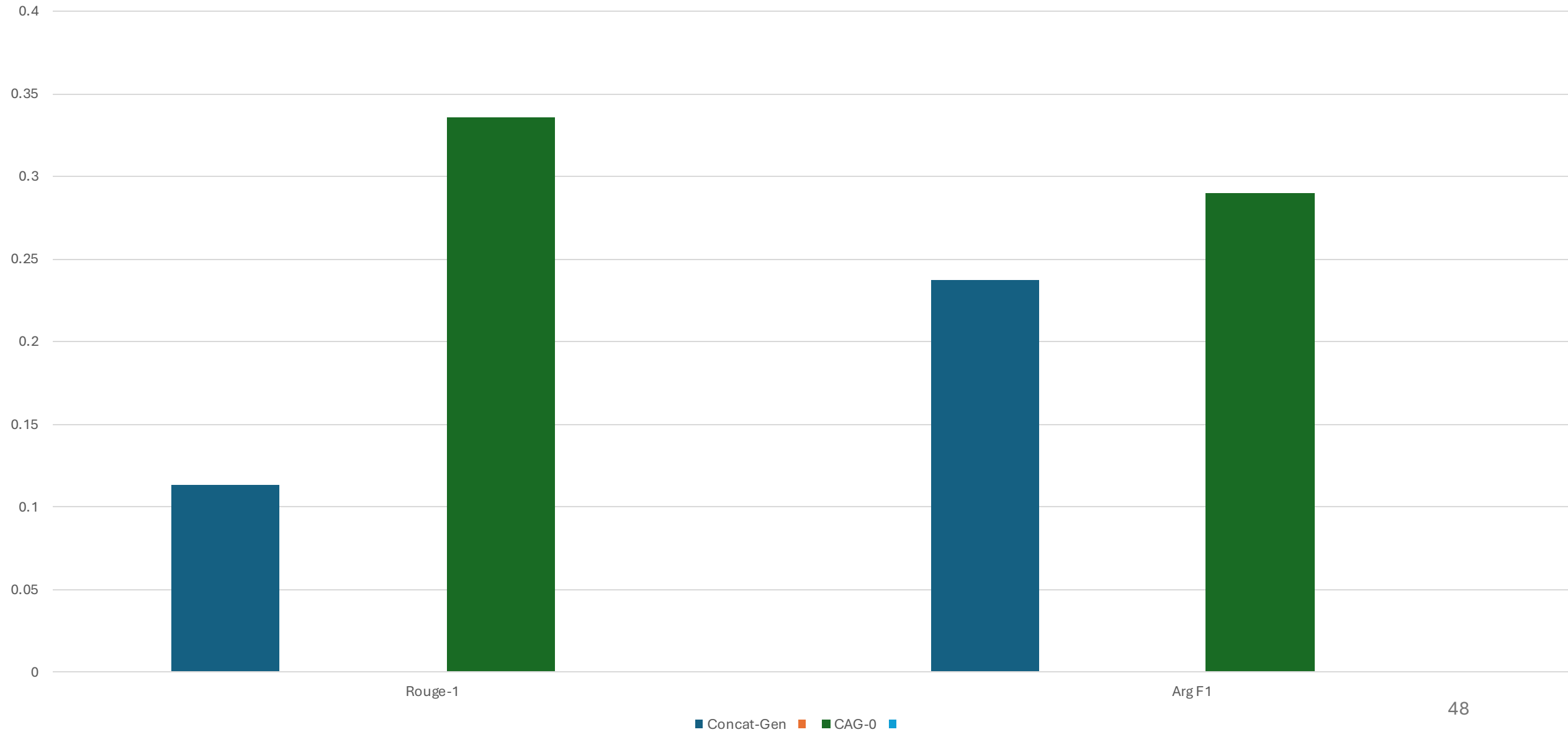
**A** **<think>** What new query can I think of to help me find more information about the Notre-Dame fire?... The video shows... Considering all this, I think a good follow-up would focus on the extent of the damage **</think>**

**B** **<think>** This video captures information about the aftermath. No new query needed. **</think>**

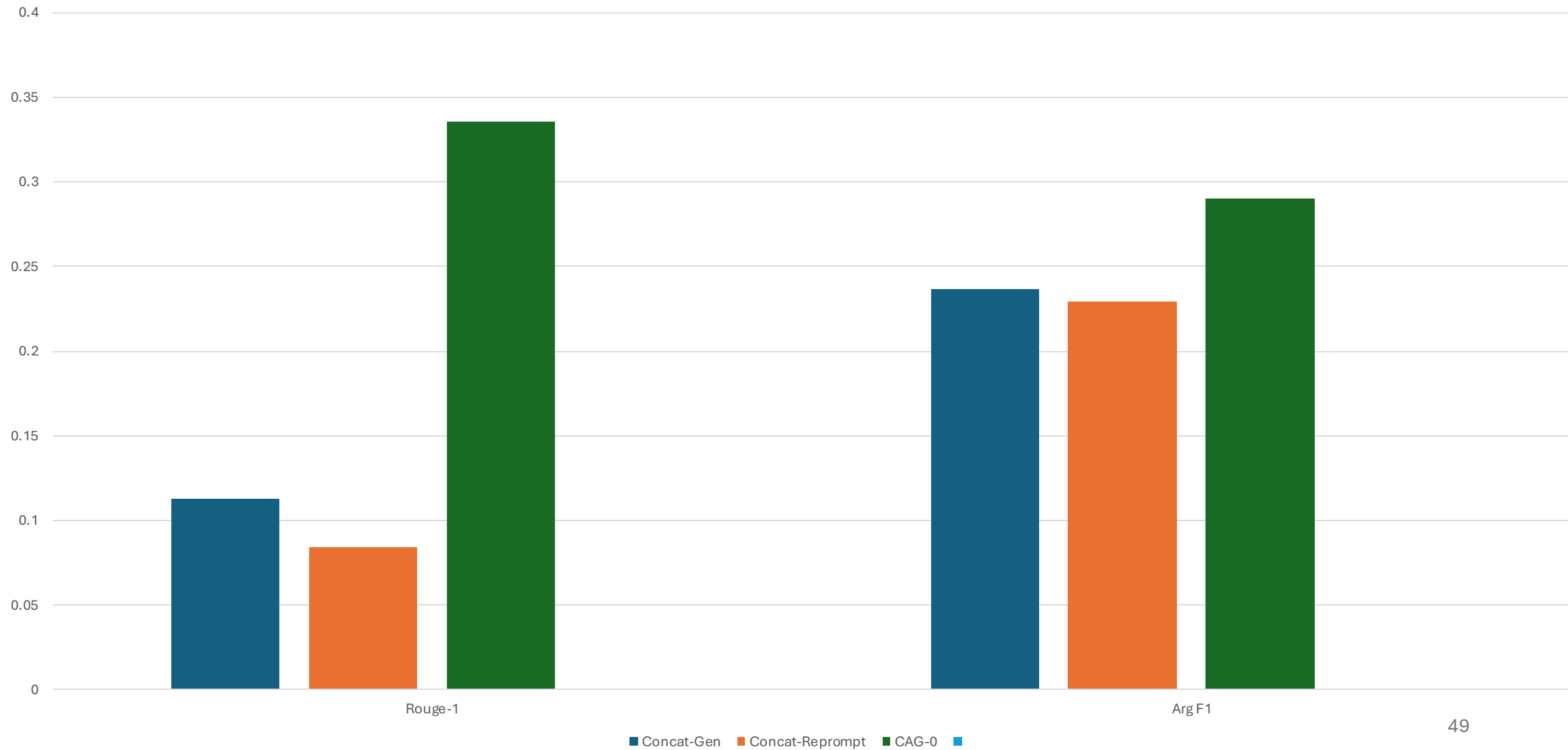
# WikiVideo: Results



# WikiVideo: Results

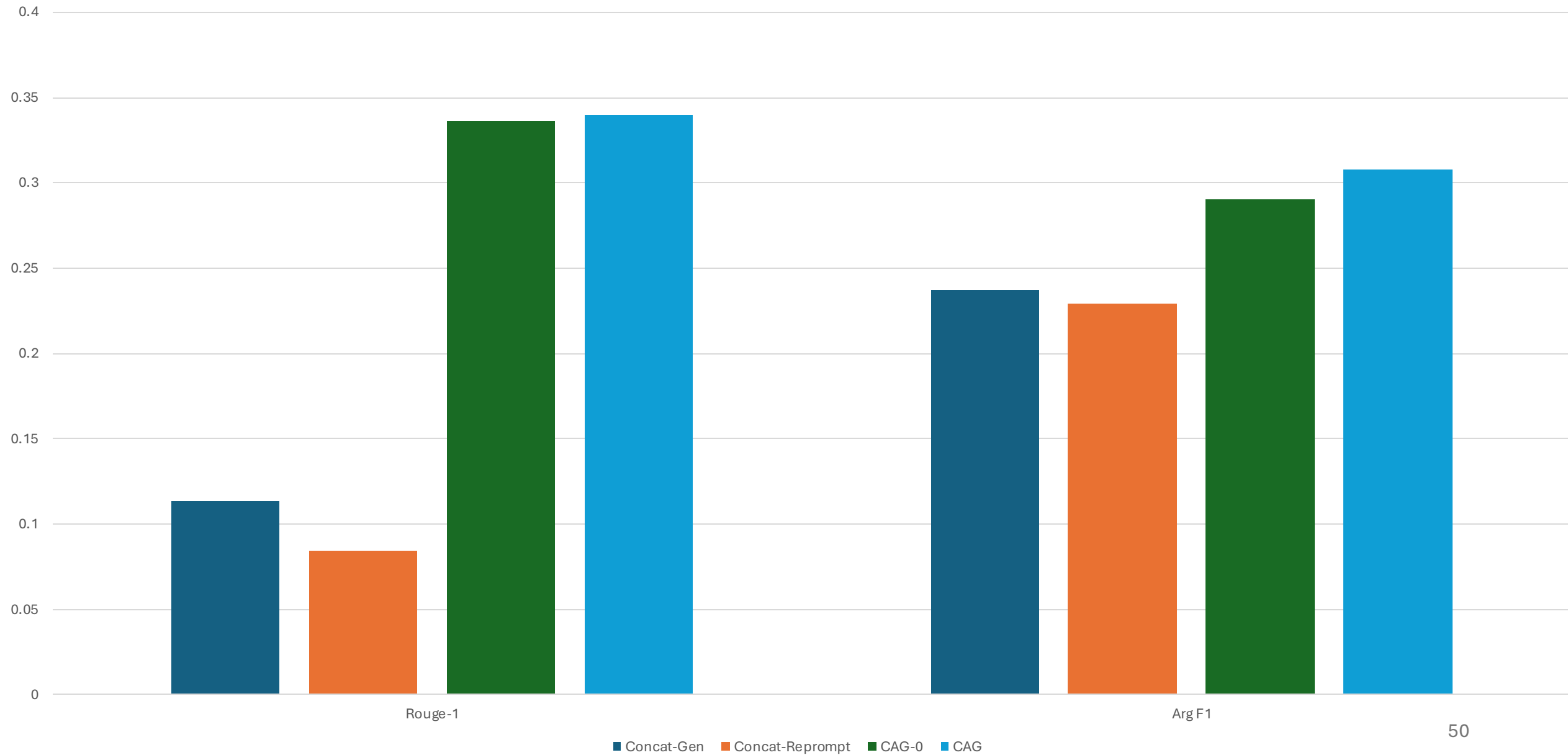


# WikiVideo: Results





# WikiVideo: Results



# WikiVideo: CAG-2 Output

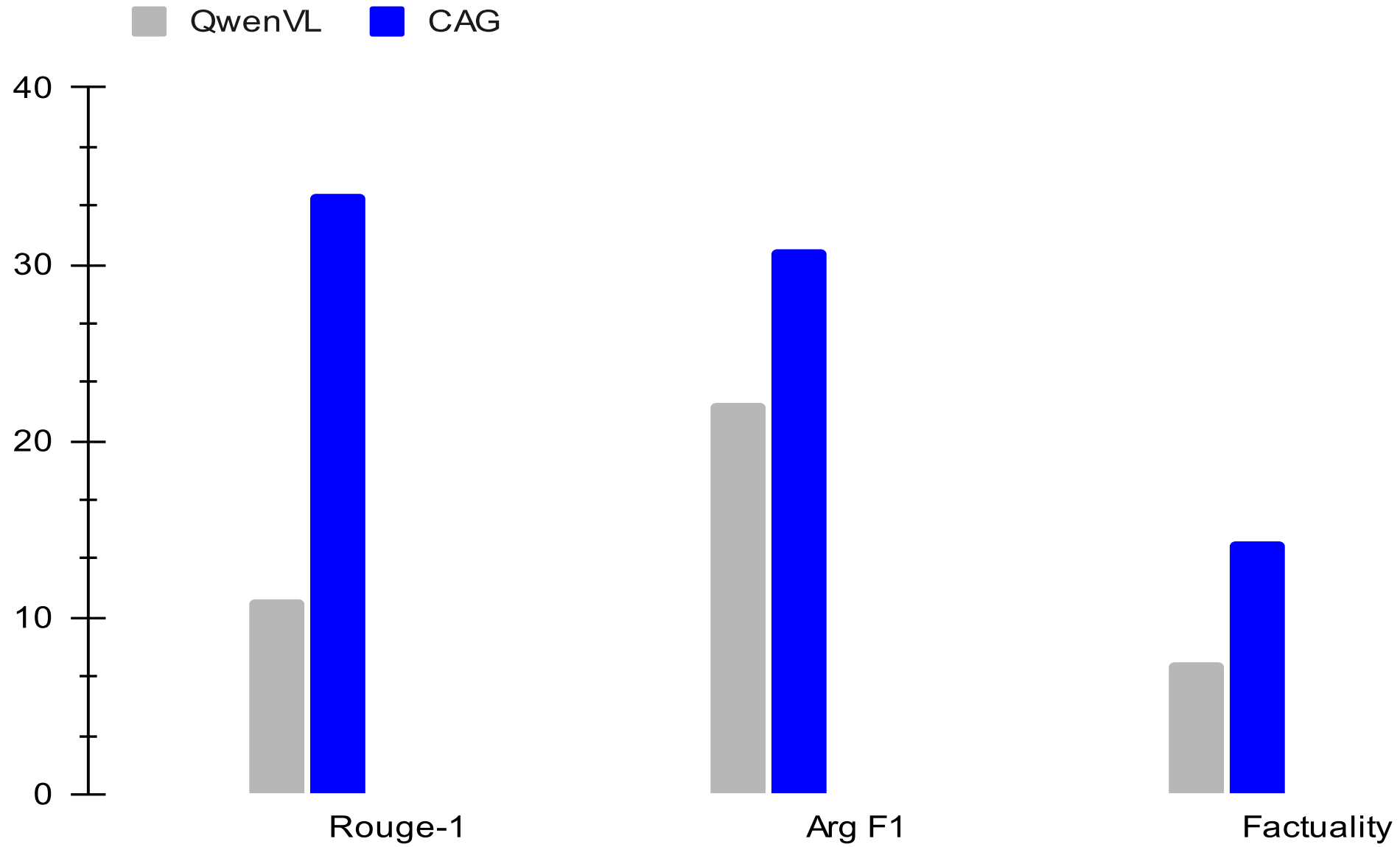
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# WikiVideo: CAG-2 Output

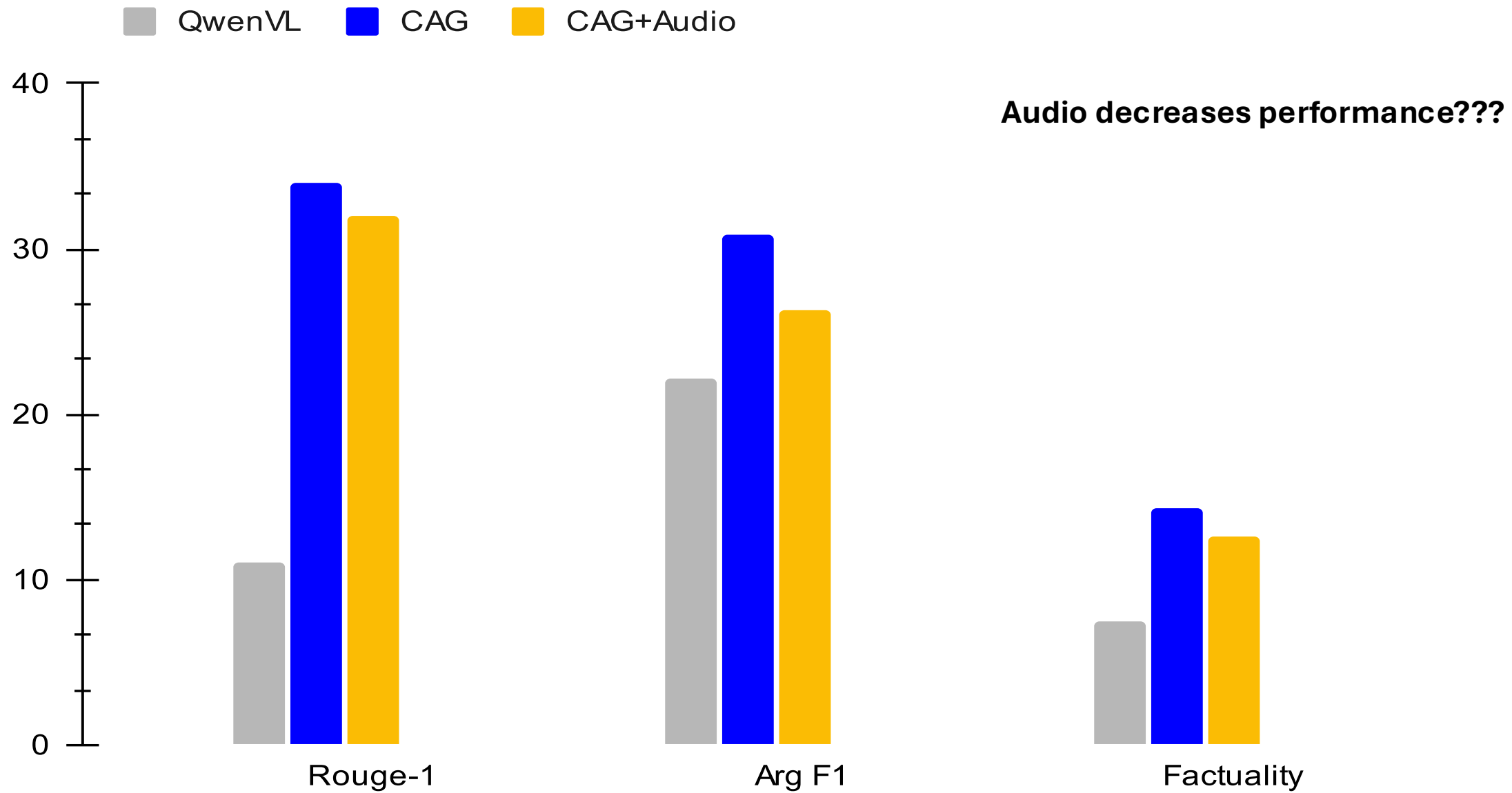
BOLD = NOT IN THE VIDEO CONTENT

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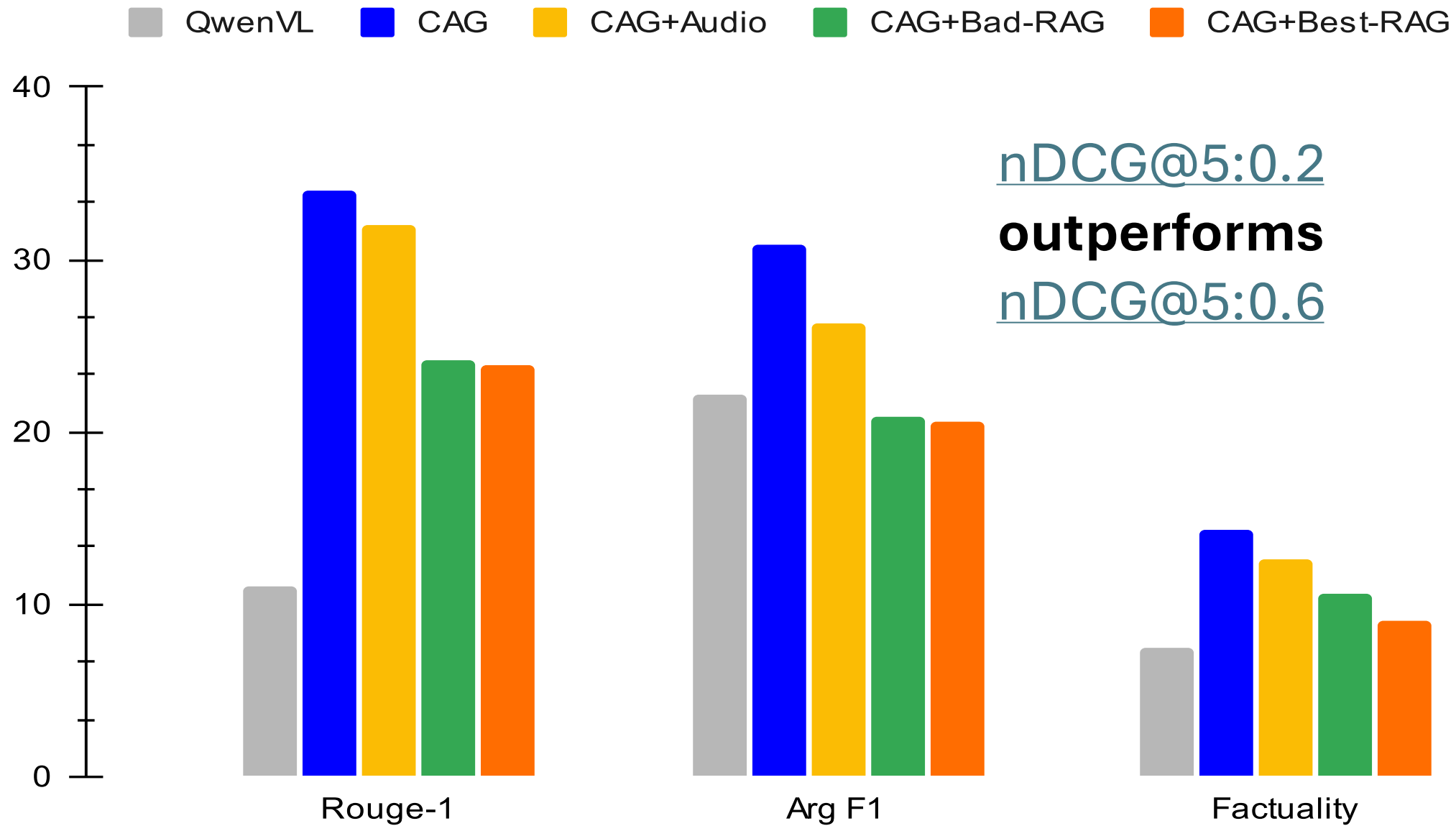
# Results



# Results



# Results



Video-ColBERT



WikiVideo



MultiVENT



[nlp.jhu.edu/multivent/](http://nlp.jhu.edu/multivent/)

ACL Workshop on  
Multimodal RAG



[nlp.jhu.edu/magmar/](http://nlp.jhu.edu/magmar/)