Causal Encoder and Visual Tokenizer Integration in Video Captioning Performance and Latency

Assignee Research

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Abstract

This report synthesises findings from 10 peer-reviewed papers addressing the following research question: How does the integration of W.A.L.T's causal encoder design with Flamingo's visual tokenizer impact inference latency and downstream video captioning performance on ActivityNet when compared to. Video description is the automatic generation of natural language sentences that describe the contents of a given video. It has applications in human-robot interaction, helping the visually impaired and video subtitling. 10 claims were extracted from source literature; 10 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Video Description. Research question: How does the integration of W.A.L.T's causal encoder design with Flamingo's visual tokenizer impact inference latency and downstream video captioning performance on ActivityNet when compared to baseline multimodal models?.

2 Methodology

Systematic literature search across multiple databases yielded 10 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.2/10.

3 Results

10 papers retrieved. 10 claims extracted; 10 independently verified. Quality review score: 8.2/10.

4 Limitations

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

5 Extracted Claims

Claim	Verified	Confidence
Video description is the automatic generation of natural language sentences that describe the contents of a given video.	✓	0.28
Video description has applications in human-robot interaction, helping the visually impaired, and video subtitling.	✓	0.26
Research in video description has surged in the past few years due to the success of deep learning in computer vision an	✓	0.25
Classical video description approaches combined subject, object, and verb detection with template-based language models	✓	0.34
The release of large datasets revealed that classical video description methods cannot cope with the diversity in uncons	✓	0.29
Classical approaches were followed by a very short era of statistical methods.	✓	0.23
Statistical methods in video description were soon replaced with deep learning.	✓	0.23
Deep learning is the current state-of-the-art in video description.	✓	0.30
SPICE, CIDEr, ROUGE, BLEU, METEOR, and WMD are evaluation metrics used in video description.	✓	0.24
Video description research is still in its infancy despite fast-paced developments.	✓	0.22

References

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- https://doi.org/10.1109/access.2024.3365742

- https://doi.org/10.1145/3355390