Audio Noise Robustness and Word Error Rate in Qwen-Audio vs. OpenPangu-7B-MLA Benchmarks

Assignee Research

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Abstract

Audio-Visual Speech Recognition (AVSR) enhances speech recognition robustness by leveraging visual cues, while real-world scenarios remain challenging due to viewpoint variation, audio distortion, and visual occlusion, which degrade modality quality and increase audio-visual asynchrony. In this paper, we propose a novel Modality-aware Multi-view Self-supervised representation framework for robust Audio-Visual Speech Recognition (M2S-AVSR). First, we introduce a multi-view representation learning encoder to learn view-invariant visual speech representations. Next, we employ a modality-aware mod

1 Introduction

This paper examines: M2S-AVSR: Modality-aware Multi-view Self-supervised Representation for Robust Audio-Visual Speech Recognition. Research question: What is the impact of audio noise robustness on the word error rate of Qwen-Audio versus OpenPangu-7B-MLA in multilingual speech understanding benchmarks?.

2 Methodology

Systematic literature search across multiple databases yielded 11 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.7/10.

3 Results

11 papers retrieved. 14 claims extracted; 11 independently verified. Quality review score: 7.7/10.

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
M2S-AVSR achieves up to 29.4% relative improvement under viewpoint perturbation and visual degradation settings on LRS3.	✓	0.28
M2S-AVSR achieves new state-of-the-art performance on the MISP2021-AVSR test set.	✓	0.26
M2S-AVSR achieves the best result in outdoor scenes on AISHELL8-RealScene.	✓	0.26
The proposed method and dataset provide useful support for future research on robust speech and multimodal tasks under r	✓	0.24
Deep learning has significantly advanced ASR systems, leading to strong performance under controlled conditions.	✓	0.17
Robust speech recognition in real-world environments remains challenging due to background noise, reverberation, competi	✓	0.23
Recent studies have explored the use of visual information, such as lip movements, to provide complementary cues when th	✓	0.24
Audio-visual speech recognition (AVSR) has been widely studied to improve robustness under adverse acoustic conditions b	✓	0.22
Early approaches explored supervised architectures such as Connectionist Temporal Classification (CTC) and sequence-to-s	✓	0.29
AVSR systems have achieved substantial improvements over audio-only counterparts, particularly in noisy environments.	✓	0.18
Self-supervised learning (SSL) methods, such as wav2vec, WavLM, and Whisper, have substantially improved acoustic modeli	×	0.15
AV-HuBERT and related approaches learn robust visual speech representations from large-scale unlabeled audio-visual data	✓	0.29
M2S-AV 600 achieves a score of 21.95 on LRS3+Vox2(En).	×	0.03
M2S-AVROVER 600 achieves a score of 18.82 on LRS3+Vox2(En).	×	0.03

References

- http://arxiv.org/abs/2606.05763v2
- http://arxiv.org/abs/1912.05946v2
- http://arxiv.org/abs/2304.00649v1