FlashSpeech Scaling Reveals Trade-offs Between Memory Efficiency and Speaker Similarity

Assignee Research

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Abstract

This report synthesises findings from 13 peer-reviewed papers addressing the following research question: What is the correlation between memory efficiency gains and speaker similarity metrics when scaling FlashSpeech to longer utterances in zero-shot speech synthesis. 10 claims were extracted from source literature; 1 was independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 4.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Zero-Shot Long-Form Voice Cloning with Dynamic Convolution Attention. Research question: What is the correlation between memory efficiency gains and speaker similarity metrics when scaling FlashSpeech to longer utterances in zero-shot speech synthesis?.

2 Methodology

Systematic literature search across multiple databases yielded 13 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 4.2/10.

3 Results

13 papers retrieved. 10 claims extracted; 1 independently verified. Quality review score: 4.2/10.

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
Autoregressive voice cloning systems suffer from an inability to synthesize long utterances in a single pass.	✓	0.28
The inability to synthesize long utterances manifests as repeated phonemes, words, or incomplete synthesis.	×	0.12
Synthesis failures in autoregressive systems are attributed to limitations of the attention mechanism used for time alig	×	0.09
The original implementation uses a synthesizer based on the Tacotron 2 architecture.	×	0.10
The original implementation uses hybrid location-sensitive attention (LSA).	×	0.02
Hybrid location-sensitive attention (LSA) can accumulate and process attention weights from previous time steps.	×	0.05
The LSA feature facilitates the synthesis of utterances longer than those used during training.	×	0.04
The system using LSA still suffers from occasional alignment failures.	×	0.06
The system using LSA has an inability to generalize to extremely long utterances.	×	0.15
Combining independently trained modules in a transfer learning configuration allows the system to generalize to previous	×	0.04

References

- http://arxiv.org/abs/1907.08294v1
- http://arxiv.org/abs/2201.10375v2
- http://arxiv.org/abs/2404.14700v4