

# Phonological Embeddings Enhance OpenPangu-7B-MLA Cross-Domain Robustness on MMSU

Assignee Research

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## Abstract

This report synthesises findings from 10 peer-reviewed papers addressing the following research question: What is the impact of integrating phonological embeddings into OpenPangu-7B-MLA on its cross-domain robustness in the MMSU benchmark. 9 claims were extracted from source literature; 1 was independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 4.5/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: MMSU: A Massive Multi-task Spoken Language Understanding and Reasoning Benchmark. Research question: What is the impact of integrating phonological embeddings into OpenPangu-7B-MLA on its cross-domain robustness in the MMSU benchmark?.

## 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 4.5/10.

## 3 Results

10 papers retrieved. 9 claims extracted; 1 independently verified. Quality review score: 4.5/10.

## 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
MMSU encompasses a wider range of acoustic features spanning 47 distinct tasks.	×	0.08
MMSU is the first benchmark to systematically incorporate linguistically grounded phenomena into spoken language underst	✓	0.21
MMSU requires models to integrate paralinguistic, phonetic, and semantic information in tasks such as sarcasm detection	×	0.09
MMSU includes 47 distinct tasks covering various linguistic phenomena and acoustic features.	×	0.11
MMSU is evaluated using 22 models, including 12 Speech-LLMs and 10 Omni Large Language Models (OmniLLMs) with audio proc	×	0.10
Each instance in MMSU consists of an audio clip and a text prompt, with the model choosing one of four options (A–D).	×	0.03
Answer options in MMSU are randomly ordered and balanced across the dataset to avoid potential positional bias.	×	0.02
All models in MMSU are evaluated with the same optimized instruction-following prompts to ensure fairness and minimize p	×	0.05
Qwen2.5-Omni-7B incorrectly identified the intonation of the sentence 'It's nice to meet you' as Fall-Rise Intonation in	×	0.02

## References

- <http://arxiv.org/abs/2506.04779v3>
- <http://arxiv.org/abs/2306.09265v1>
- <http://arxiv.org/abs/2205.05897v1>