

Synthetic Training Data Enhances Language Model Mathematical Reasoning Performance

Assignee Research

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Abstract

This report synthesises findings from 4 peer-reviewed papers addressing the following research question: How does synthetic training data improve language model performance on mathematical reasoning benchmarks v14. 17 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 3.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: An Evaluation of Large Pre-Trained Models for Gesture Recognition using Synthetic Videos. Research question: How does synthetic training data improve language model performance on mathematical reasoning benchmarks v14.

2 Methodology

Systematic literature search across multiple databases yielded 4 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 3.7/10.

3 Results

4 papers retrieved. 17 claims extracted; 0 independently verified. Quality review score: 3.7/10.

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
The RoCoG-v2 dataset consists of 7 gesture categories.	×	0.12
The synthetic training data consists of 44K videos.	×	0.15
The small real dataset consists of 203 videos.	×	0.06
K=3 is used for all KNN classification experiments.	×	0.06
The UMT model is pre-trained on K710 videos.	×	0.09
Eight frames are sampled from each video using the TSN frame-sampling strategy.	×	0.05
The ViCLIP model is pre-trained on a filtered version of the InternVid dataset with 10M video-text pairs.	×	0.08
The VideoMAE models are pre-trained on a larger dataset of 1.3B videos.	×	0.11
The KNN accuracy for ViT-B/16 UMT K710 on synthetic train and real test is 18.2%.	×	0.05
The KNN accuracy for ViT-B/16 UMT K710 on real train and real test is 31.2%.	×	0.03
The KNN accuracy for ViT-B/16 ViCLIP InternVid FLT-10M on synthetic train and real test is 19.2%.	×	0.04
The KNN accuracy for ViT-B/16 ViCLIP InternVid FLT-10M on real train and real test is 40.4%.	×	0.03
The KNN accuracy for ViT-B/16 UMT K710 + K400 on real train and real test is 45.5%.	×	0.03
The KNN accuracy for ViT-B/16 VideoMAE UnlabeledHybrid SSv2 on real train and real test is 68.7%.	×	0.03
The KNN accuracy for ViT-L/16 VideoMAE UnlabeledHybrid SSv2 on real train and real test is 71.7%.	×	0.03
The zero-shot classification accuracy for ViCLIP-B InternVid FLT-10M with original text descriptions is 25.3%.	×	0.14
The zero-shot classification accuracy for ViCLIP-B InternVid FLT-10M with transformed text descriptions is 26.3%.	×	0.14

References

- <http://arxiv.org/abs/2410.02152v1>
- <http://arxiv.org/abs/2407.04973v1>
- <http://arxiv.org/abs/2311.17453v1>