Semantic Similarity Effects on Zero-Shot Transfer Accuracy in Low-Resource Languages on XTREME-R

Assignee Research

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Abstract

Speech Affect Recognition is a problem of extracting emotional affects from audio data. Low resource languages corpora are rear and affect recognition is a difficult task in cross-corpus settings. We present an approach in which the model is trained on high resource language and fine-tune to recognize affects in low resource language. We train the model in same corpus setting on SAVEE, EMOVO, Urdu, and IEMOCAP by achieving baseline accuracy of 60.45, 68.05, 80.34, and 56.58 percent respectively. For capturing the diversity of affects in languages cross-corpus evaluations are discussed in detai

1 Introduction

This paper examines: Transfer learning from High-Resource to Low-Resource Language Improves Speech Affect Recognition Classification Accuracy. Research question: How does semantic similarity between intermediate and target tasks in low-resource languages affect zero-shot transfer accuracy on XTREME-R compared to high-resource language intermediates?.

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 8.5/10.

3 Results

4 papers retrieved. 14 claims extracted; 13 independently verified. Quality review score: 8.5/10.

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
The speech affect has different applications in multiple domains that include call centers, face affect recognition, sma	✓	0.28
The affects in speech are also being used to track depression and mental pressure in different smart home and offices en	✓	0.19
The paper (Schuller et al., 2003) discusses two methods, first is about a global static and second by applying the conti	✓	0.23
The performance of our approach is compared with the very relevant work using Deep Belief Networks (Latif et al., 2018b)	✓	0.25
The model is trained on 80 percent and tested on 20 percent unseen data.	×	0.12
The Affect Recognition Model outperforms the existing two by the improvement in accuracy and performs better in cross-co	✓	0.26
The concept of transfer learning enables us to use corpora of different languages jointly for training.	✓	0.24
IEMOCAP has a large set of data, we utilized three sessions as training and rest left for evaluations.	✓	0.24
The evaluations are done using three fold cross validation for testing specified corpora i.e. EMOVO, SAVEE and Urdu.	✓	0.23
Unweighted Average Recall is a parameter that is calculated for recall of every class.	✓	0.23
Support vector machine (Pan et al., 2012) is trained using these useful features that include linear predictive spectrum	✓	0.39
The speech affect recognition accuracy has been boosted with the advent of deep neural architectures (Beg and Beek, 2013	✓	0.26
The extreme learning machine which is a single layer hidden network feeds utterance level features and identify the hidd	✓	0.32
The 1d and 2d convolution neural network has learned global and local affect features from speech and spectrograms (Alvi	✓	0.30

References

- http://arxiv.org/abs/2103.11764v1
- http://arxiv.org/abs/2412.10008v1
- http://arxiv.org/abs/2412.16365v1