

Anomaly Detection for Automated English Language Test Scoring Improvement

Enhancing automated English language test scoring precision with multi-speaker audio data and anomaly detection.

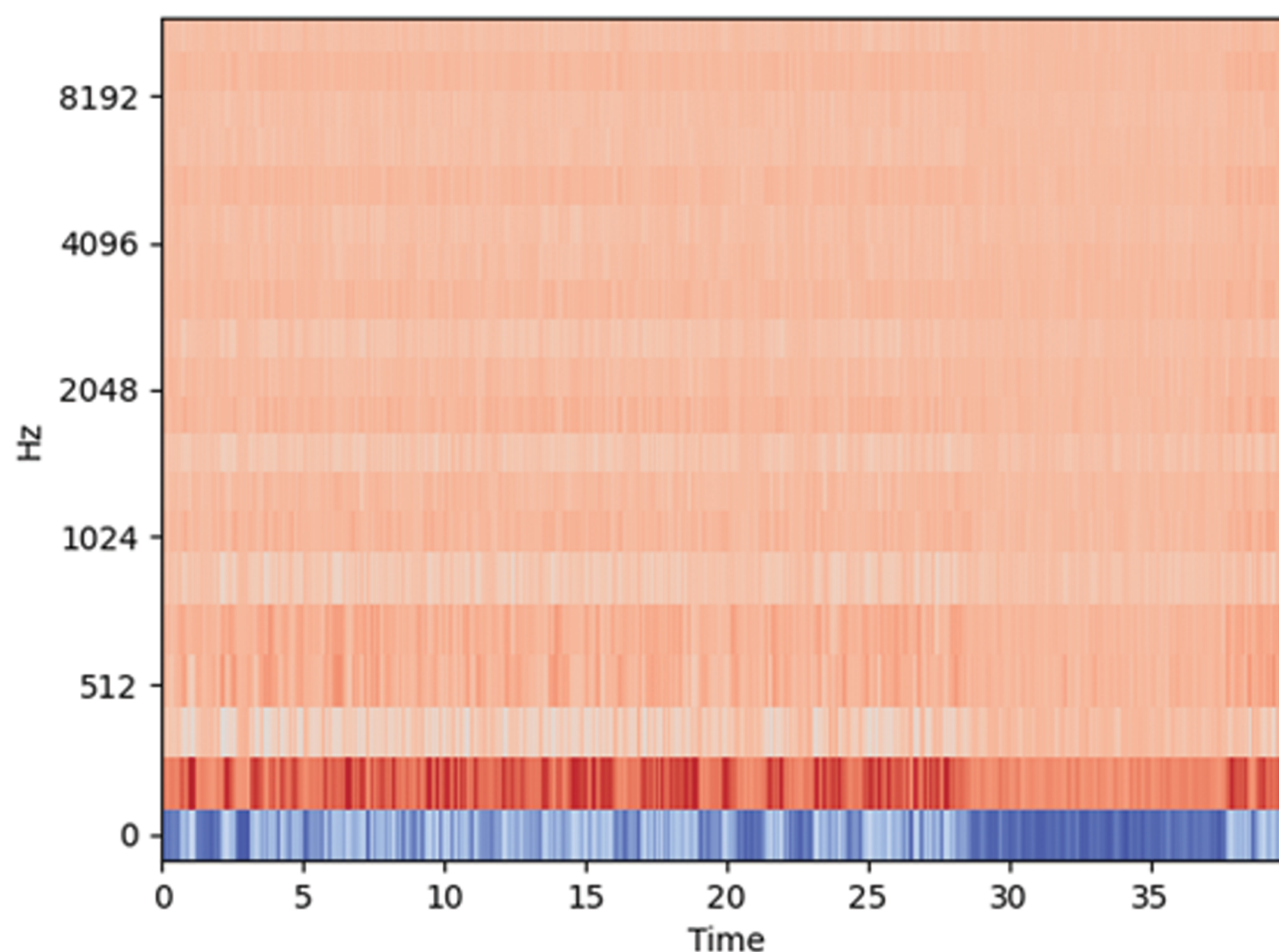
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PROJECT SUMMARY

The development of automated scoring systems has been approached through various ways in recent years, driven by the need for efficient and unbiased evaluation of language proficiency. This research investigates two strategies for anomaly detection within audio data to enhance the accuracy of such a system for English language tests.

The first strategy involves leveraging multi-speaker text-to-speech (TTS) technology to augment the training dataset for the existing English test scoring model. Real-world data samples, varying in accents, speech rates, and genders, are generated by a VITS model pre-trained on the VCTK dataset to further increase the robustness of the model.

The second strategy considers exploratory data analysis and feature engineering commonly used in anomaly detection using the database containing a large number of English language exam records, where the extracted features serve as potential markers for anomalies. We identify spoken language anomalies with the generation of Mel Frequency Cepstral Coefficients (MFCC) spectrograms from English and anomaly audios and investigate their utilization as inputs for a multi-layer Convolutional Neural Network (CNN) in identifying foreign languages from all audio responses. This holds relevance in the context of automated scoring, as unrecognized foreign language in an audio response can impact machine scoring accuracy.



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