SPIRE-fluent: A self-learning app for tutoring oral fluency to second language English learners

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PROBLEM STATEMENT
Demonstrate SPIRE-fluent mobile app that helps second language English learners to learn oral fluency in a self-learning manner.

USER INTERFACE

MOTIVATION
- Oral fluency is considered as a measure of language proficiency and it can be improved by incorporating proper pause placement and correct pronunciation.
- Hence, an Android app has been developed to tutor oral fluency.
- This would benefit second language learners for whom effective training methods are not easily accessible.

PROPOSED ARCHITECTURE
- User interface (front-end) is available at learner's location.
- Server (back-end) is situated at our location.
- Both front-end and the back end communicate via the internet.

DEMONSTRATION

BACK-END
- The syllables are identified using an automatic speech recognition toolkit and a syllabification software.
- Word level score: $1 - \tanh(\alpha(n_E - n_L))$; where, $n = \sum_{p \in w}(GoP(p) \sum_{q \in Q} GoP(q)) \frac{N_p}{N_w}$, $Q$ is the complete phoneme set, $p$ is a phoneme in word $w$ and $N_p$ is the number of phonemes in $w$, $GoP$ is the goodness of pronunciation [1], $E$ and $L$ represent expert and learner and $\alpha = 2$.
- Pauses are identified based on [2] and classified as long or short.
- Pause based score: Probability that a pause belongs to the same class as that of the corresponding pause in the expert’s utterance.
- Sentence level score: average of word level and pause based scores.

CONCLUSION
- We present an Android app that teaches L2 English learners the nuances of oral fluency.
- Word and sentence level scores along with the pauses and syllables in both learner’s and expert's utterances are provided as feedback.

REFERENCE

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http://spire.ee.iisc.ac.in/spire/
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