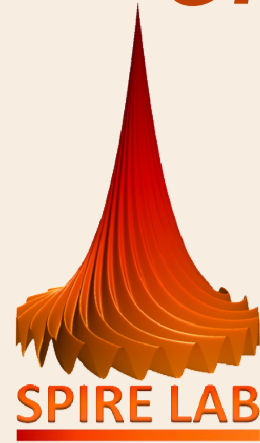


# SPIRE-fluent: A self-learning app for tutoring oral fluency to second language English learners

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## PROBLEM STATEMENT

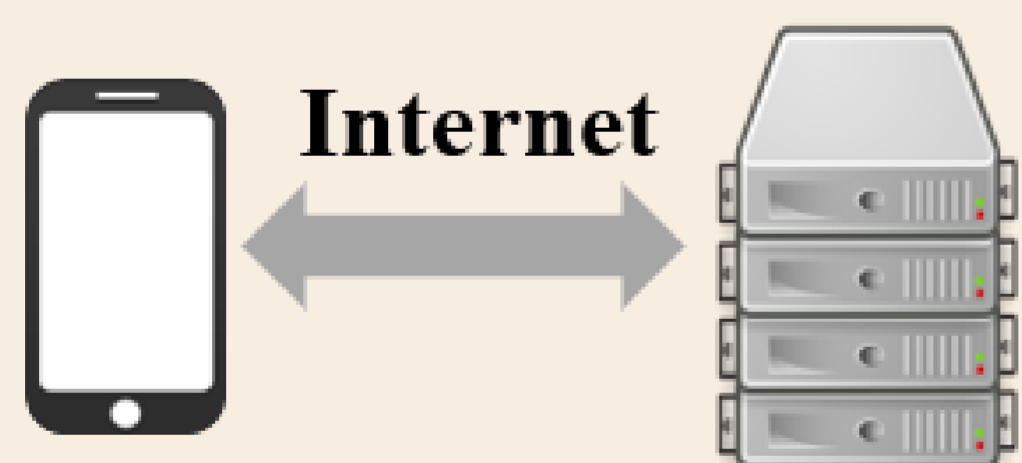
Demonstrate SPIRE-fluent mobile app that helps second language English learners to learn oral fluency in a self-learning manner.

## USER INTERFACE

## MOTIVATION

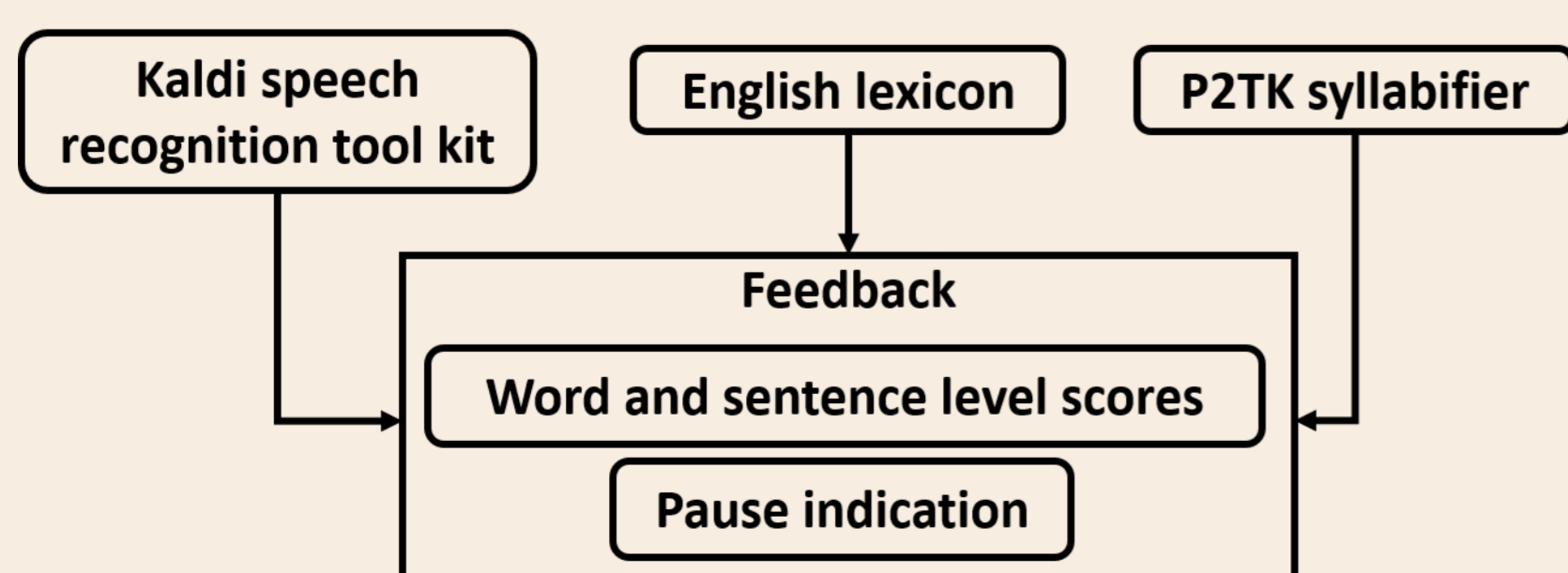
- Oral fluency is considered as a measure of language proficiency and it can be improved by incorporating proper pause placement and correct pronunciation.
- Hence, an Android app has been developed to tutor oral fluency.
- This would benefit second language learners for whom effective training methods 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,  $n = \frac{\sum_{p \in w} \left( \frac{GoP(p)}{\sum_{q \in Q} GoP(q)} \right)}{N_p}$ ,  $Q$  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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- S. Ananthkrishnan and S.S. Narayanan, "Automatic prosodic event detection using acoustic, lexical, and syntactic evidence," *IEEE transactions on audio, speech, and language processing*, vol. 16, no.1, pp. 216-228, 2008.

ACKNOWLEDGEMENT: Authors thank the Department of Science & Technology, Government of India and the Pratiksha Trust for their support