iLEAP

Human-AI Teaming Based Language Learning Solution For Early Dual Language Learners
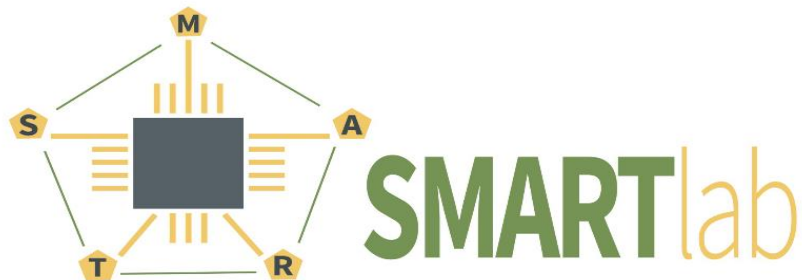
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SMARTlab

Sustainable·**M**obile·**A**utomomous·**R**eal-time·**T**ranslational

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The Challenge for DLLs

- To achieve the English language proficiency needed for academic success, social and emotional competencies, dual language learners (DLL) whose first language (L1) is not English need many opportunities to speak and read English (L2).

- They **often remain silent in class** while they develop the language skills.

- This **so-called "silent period"** may last several months or more than a year, and is often a time **of great discomfort for the student as well as the teacher.**

Current Solutions

ESL offered by
Expert Reading
Specialists

⬇

- Large group setting
- Limited 1:1 attention
- Lack of opportunities to practice outside of school and at home

Babbel duolingo

⬇

- Help develop reading and listening skills
- Limited training towards pronunciation proficiency

What is MISSING

What is missing is a learning tool that offers DLLs the opportunities to practice accurate reading and speaking even **when a native speaker is not available to assist.**

The iLEAP Solution

- **Human-AI Teaming based solution**
  - Addressing the **availability of expert** by using AI
    - Automatically **intelligibility assessment** and **immediate feedback** at various levels: phoneme, word, phrase and sentences
    - Interactive and **personalized learning** on **improving pronunciation.**
  - Addressing the **engagement** issue by **interactive visual based coaching**
    - Age-friendly user interaction and experience
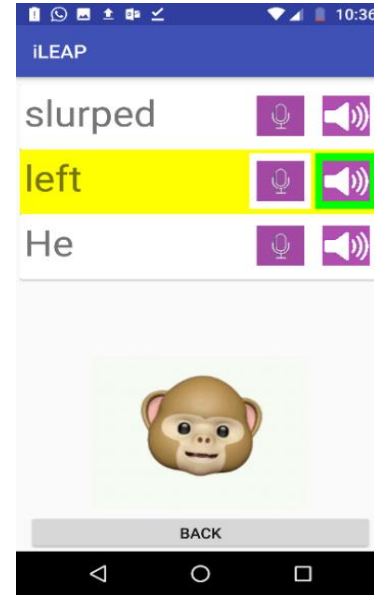 - Addressing **the cost and distribution** issue by using **mobile app** based solution
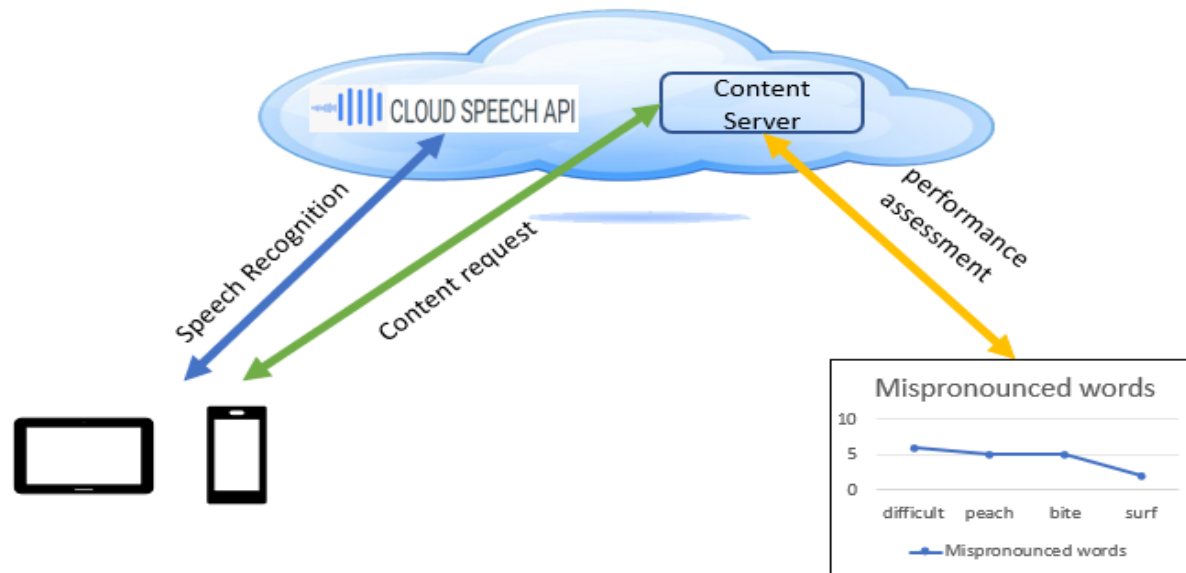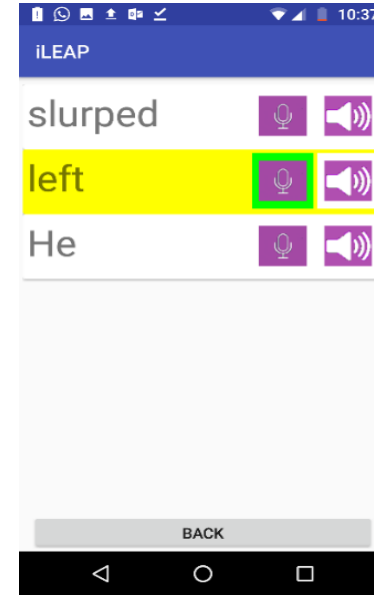
iLEAP In Action
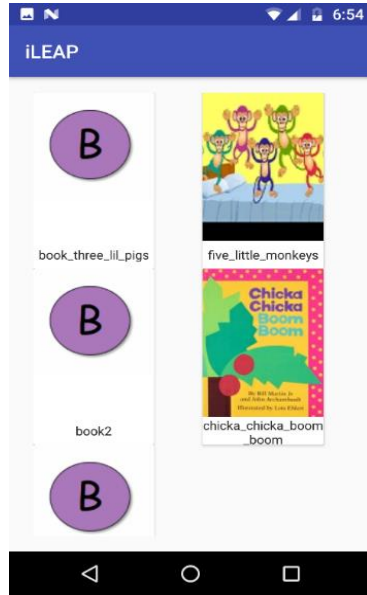
Recommendation

**Practicing & Assessment**

Coaching

Correction & Retention
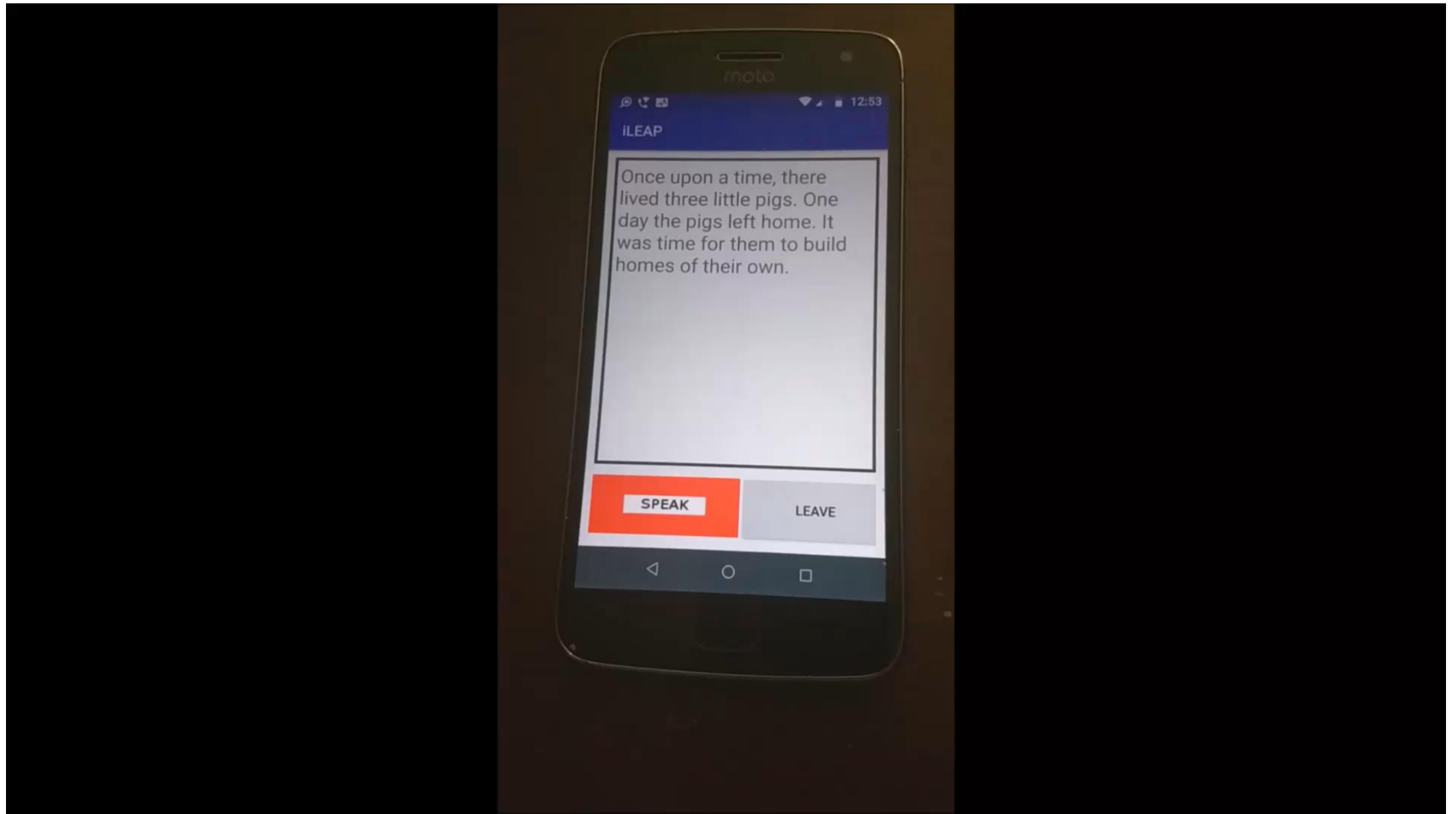
Intelligibility Analysis – Levenshtein's Algorithm

	five	little	monkey	jumping	the	bad
	0	1	2	3	4	5	6
five	1	0	1	2	3	4	5
little	2	1	0	1	2	3	4
monkeys	3	2	1	1	2	3	4
jumping	4	3	2	2	1	2	3
on	5	4	3	3	2	2	3
the	6	5	4	4	3	2	3
bed	7	6	5	5	4	3	3

Levenshtein's Algorithm is applied at both **Word and Phoneme levels.**
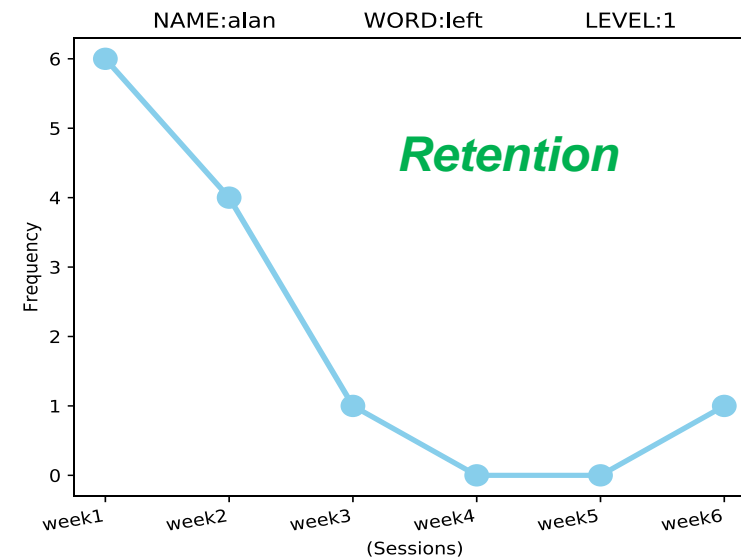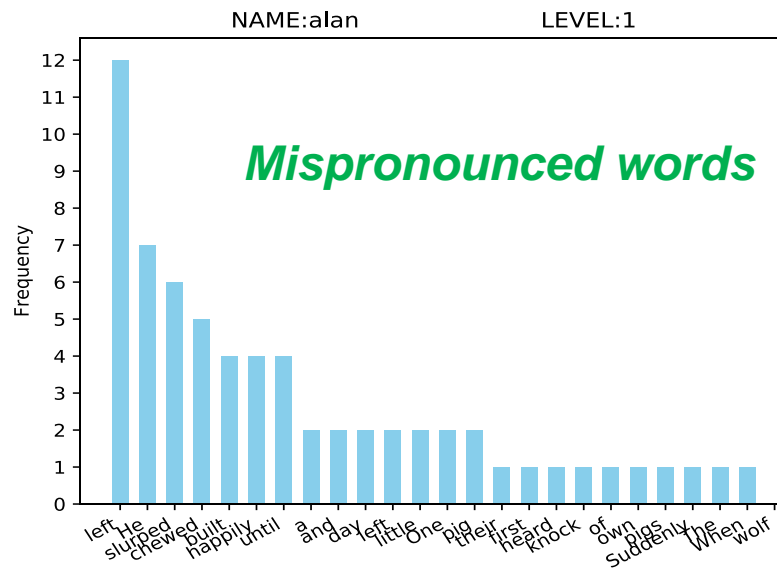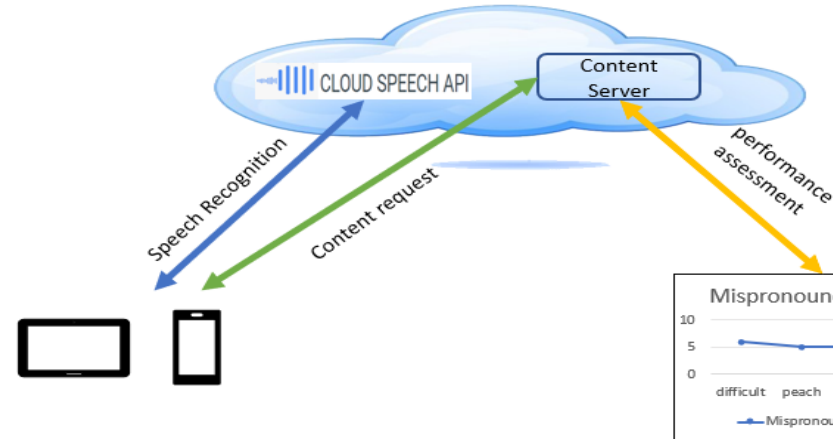
Correcting Identified Pronunciation Errors
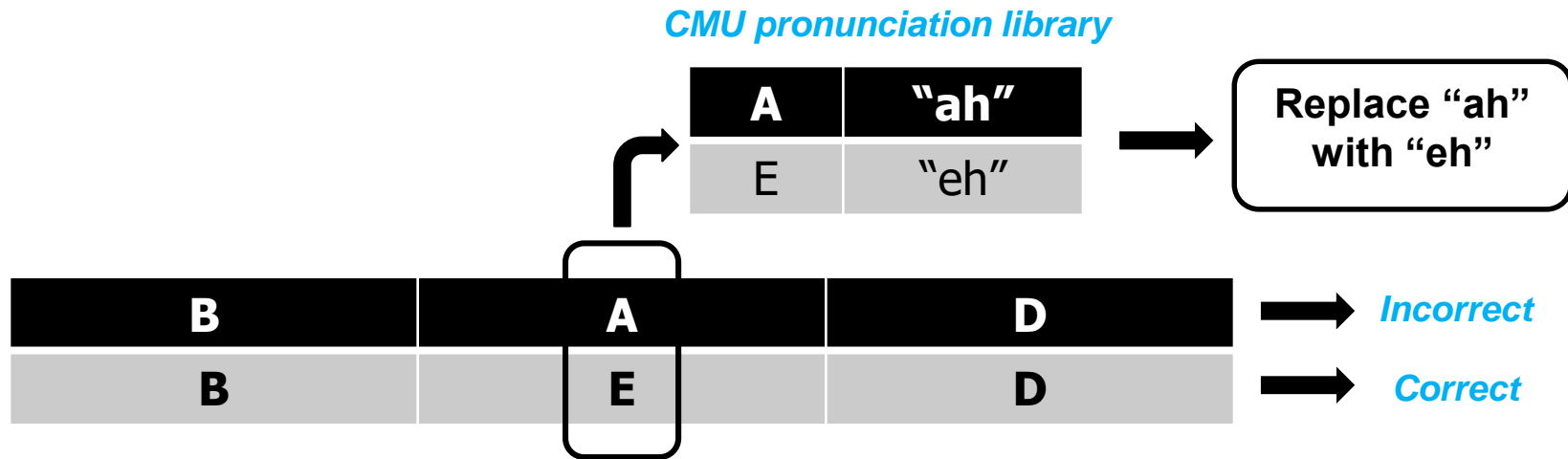
Demo

iLEAP – Analytics and Recommendation

Conclusion

- iLEAP proves that AI, AR and Mobile computing can be leveraged to build an adaptable and cost – effective tool for DLLs

- Can provide independent and personalized tutoring with focus on pronunciation

- Tracking learner's experience which helps in improved retention

Future Work

- Improved individual learning pattern profiling for accurate reading material recommendations

- User experience and user interaction adaptable to different age groups.

References

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Thank you!