





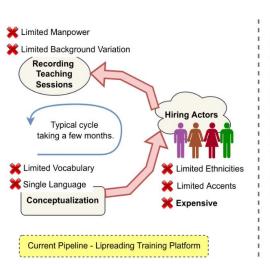
Towards MOOCs for Lipreading: Using Synthetic Talking Heads to Train Humans in Lipreading at Scale (WACV 2023)

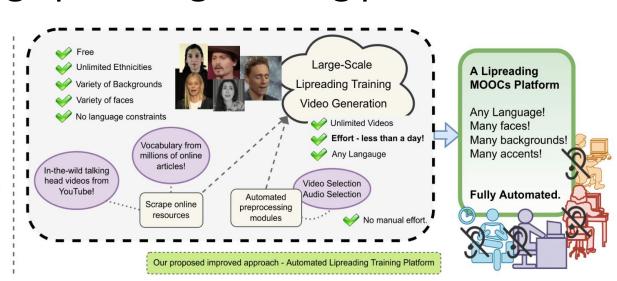
ABSTRACT

Many people with some form of hearing loss consider lipreading as their primary mode of communication. However, finding resources to learn or improve one's lipreading skills can be challenging. Due to COVID19 pandemic, direct interactions with speech therapists has been restricted. Moreover, lipreading online resources are scarce as creating such resources is an extensive process. Such platforms are limited in vocabulary, supported languages, and speakers. We propose an automated pipeline replacing real human talking videos with synthetically generated videos at scale.

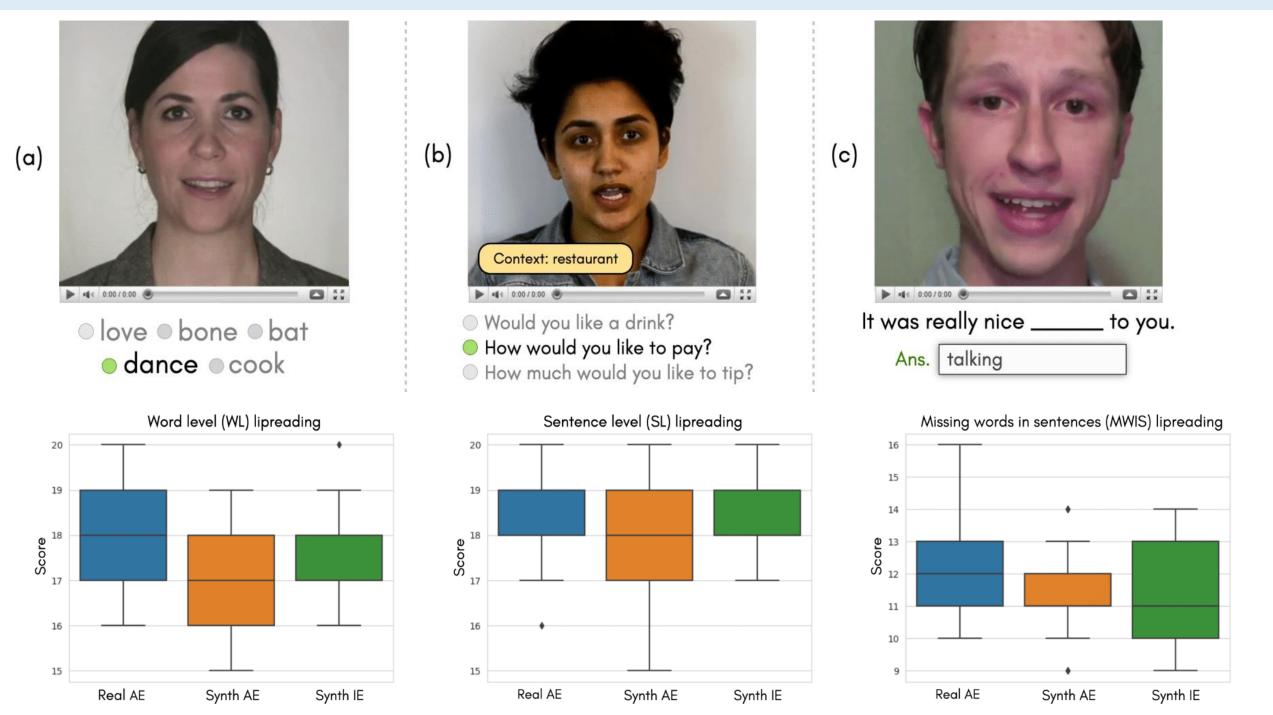
METHODOLOGY

We develop a technique to generate synthetic lipreading training content at scale using SOTA talking head generators, text-to-speech models, and computer vision techniques. We perform an extensive human evaluation using carefully thought-out lipreading exercises to validate the quality of our designed platform against existing lipreading training platforms.





RESULTS

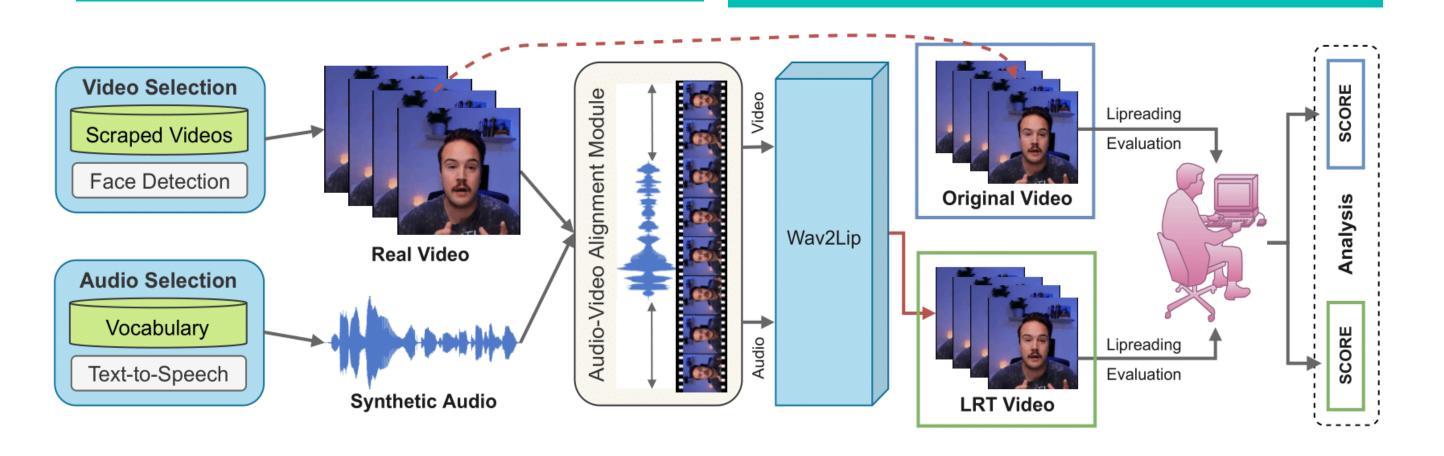


Lipreading Training

We define three lipreading protocols – 1) lipreading isolated words, 2) lipreading sentences with context, and 3) lipreading missing words in sentences.

User Study

We perform a user study on 50 participants with hearing loss on real and synthetically generated videos in American and Indian accented English.



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CONCLUSION FUTURE WORKS

We perform statistical analysis to validate that the difference in user performance on real and synthetic lipreading videos is statistically insignificant. We also show advantages of lipreading in native accents, thus highlighting the dire need for lipreading training in many languages and accents. Our studies concretely point toward approach in potential of our developing a large-scale lipreading MOOC platform that can impact millions of people with hearing loss across the globe.

REFERENCES

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