# EaseTalk: An LLM-Driven Speech Practice Tool for Real-Life Scenarios

Marco Faggiani
School of Computer Science & IT
University College Cork, Ireland

Malik Muhammad Qirtas
Insight Centre for Data Analytics
School of Computer Science & IT
University College Cork, Ireland

Pauline Frizelle
Department of Speech and Hearing Sciences
School of Clinical Therapies
University College Cork, Ireland

Fiona Ryan
HSE
South Eastern Community Healthcare
County Wexford, Ireland

Nicole Muller
Department of Speech and Hearing Sciences
School of Clinical Therapies
University College Cork, Ireland

Andrea Visentin
Insight Centre for Data Analytics
School of Computer Science & IT
University College Cork, Ireland

***Abstract*—Stuttering can make everyday conversations challenging, especially in situations that involve unfamiliar people or social pressure. While traditional therapy provides structured support, many individuals struggle to apply those techniques in real-world scenarios. Digital speech tools exist, but most focus on repetitive drills and rarely provide realistic, context-driven speaking practice. We present *EaseTalk*, an AI-driven mobile application that allows users to practice real-life conversational scenarios in a supportive, self-paced environment. The app uses speech recognition and prompt-engineered large language models (LLMs) to detect speech disfluencies such as repetitions, prolongations and blocks. *EaseTalk* aims to empower users through independent, scenario-based speech practice with potential applications extending beyond stuttering into areas like social anxiety, interview preparation and language learning.**

***Index Terms*—stuttering, stammering, speech therapy, large language models, mobile application**

## I. Introduction

Stuttering is commonly defined as a speech disorder that involves involuntary disruptions in the flow of speech, such as repetitions, prolongations or blocks, particularly in short speech elements such as sounds, syllables or single syllable words [1]. While these features are observable, stuttering also includes internal experiences such as loss of control, anxiety or avoidance, which may impact an individual's ability to communicate effectively in daily life [2], [3]. This dual perspective reflects both the behavioural characteristics of stuttering and its broader social and emotional consequences. It affects about 1% of people worldwide and can significantly disrupt everyday activities [4]. Simple situations, such as ordering a coffee, answering a phone call or participating in job interviews can become sources of stress, embarrassment or frustration for individuals who stutter [5]. These experiences often lead to decreased self-confidence and can negatively impact personal and professional lives [6].

Traditionally, stuttering is addressed through speech therapy sessions conducted by qualified clinicians. While these sessions can be highly beneficial, they are often limited by accessibility imitations, high costs and less opportunities for realistic, everyday practice outside clinical settings. Consequently, individuals may struggle to practice and reinforce techniques learned in therapy during real-life social interactions.

Digital speech therapy apps like Stamurai [7] and BeneTalk [8] have emerged to improve accessibility and convenience. These tools make speech practice more readily available, but typically, such apps rely on repetitive drills or structured exercises. More advanced approaches, such as StutterAI [9] have used machine learning and voice analysis techniques to detect stuttering and provide tailored suggestions. However, StutterAI still primarily emphasizes clinical assessments and structured therapy recommendations rather than enabling flexible, user-driven practice in real conversational scenarios.

*EaseTalk* addresses these limitations by providing a mobile app specifically designed to encourage independent speech practice in realistic, everyday scenarios outside a clinical environment. It enables users to practice real-life situations, such as ordering in cafes or participating in job interviews, in a comfortable and stress-free manner. The app uses advanced AI techniques, mainly large language models (LLMs), to detect instances of stuttering in real-time. This detection allows users to practice speech and even voluntarily stutter, which is a technique shown to reduce emotional distress and negative perceptions associated with stuttering through desensitization similar to exposure therapy [10]. By facilitating voluntary stuttering in realistic scenarios, *EaseTalk* supports users in building confidence and managing anxiety around speech without overly emphasizing fluency. This empowers users to become self-reliant by enabling them to practice speech independently in their own time and space. Avoidance of stuttering and of speaking situations altogether is well documented in the literature and is often a greater barrier to communication than disfluency itself [11]. Studies in neurodiversity support approaches which emphasize that speech tools should not only support fluency, but also help individuals reduce avoidance and increase participation in everyday communication [12]. EaseTalk aligns with this view by allowing users to engage with speaking scenarios in a safe and supportive environment to help them reduce fear and avoidance rather than striving for fluency as the sole goal. It is important to emphasize that *EaseTalk* is designed strictly as a supplementary practice tool, not as a therapy intervention or a replacement for professional clinical treatments.

## II. System Design and Usage

### A. Overview

*EaseTalk* is developed using the Flutter framework and Firebase backend to provide a cross-platform, responsive experience. The app's core components are structured to support interaction flows and data handling across platforms. A simplified architecture of the app is presented in Figure 1, showing the flow from user authentication to scenario engagement and data handling via Firebase.

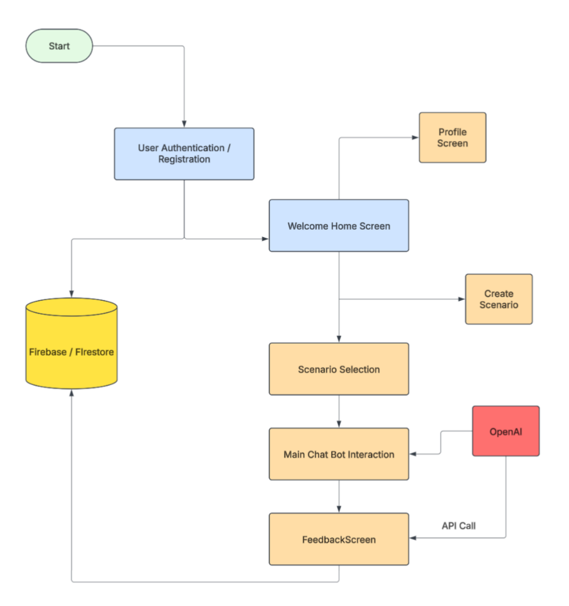


Fig. 1. System architecture of *EaseTalk*, including Firebase backend and scenario interaction flow.

### B. Scenario Based Practice

Users can either select pre-built scenarios or create their own based on personal speech goals. Each scenario includes a title, description, difficulty level, and objectives, which help guide the conversation. This supports user-driven customization and provides diverse practice opportunities. Figure 2 shows the interface for creating a new scenario.

### C. LLM-Based Interaction and Stutter Detection

Once a scenario is selected, the user begins a role-play conversation with the system. The app uses speech recognition to transcribe spoken input, which is then processed by a large language model (LLM) using custom prompts. For this purpose, we used OpenAI's GPT 3.5 model for stutter detection and conversational flow generation. These prompts were developed based on patterns in the stuttering literature [13] and help the LLM detect speech disfluencies such as

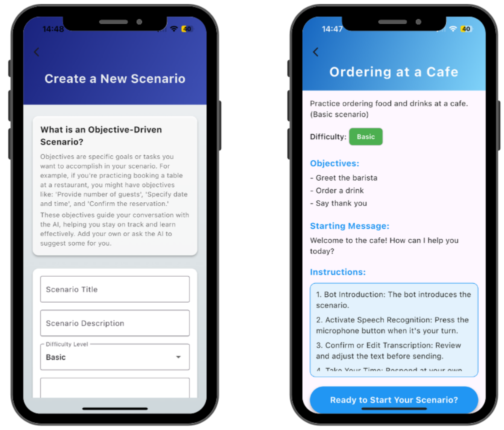


Fig. 2. Screenshot of the scenario creation screen where users define objectives and difficulty (left) and Example scenario to practice how to order at a cafe (right)

repetitions ("I-I want"), prolongations ("sssssometimes") and filler words such as 'um' or 'uh'.

To improve the reliability and clarity of the model, we used a technique called chain-of-thought prompting. This involves guiding the model to reason step by step before giving its final output. For example, when processing a user's spoken sentence, the model might first identify repeated phrases, then recognize signs of blocking and finally summarize its findings in simple terms such as noting that the user repeated words twice and experienced one block. This structured approach helps produce clearer, more reliable results and allows users to reflect on their speech patterns in a low-pressure, non-clinical way.

### D. Practical Example: Ordering Coffee

A typical usage example is the "Ordering at a Cafe" scenario (Figure 2). The app provides a conversational starting prompt and the user responds verbally. As the conversation continues, the app detects stutter events and keeps the dialogue flowing in context. Users can practice at their own pace, in their own space and without any pressure.

This setup allows individuals to practice common real-world situations while engaging naturally with the app to build confidence in speech without any external judgment.

## III. Preliminary Experts Evaluation

Since this is an early stage prototype, we have not yet conducted formal testing with individuals who stutter. However, we did engage with domain experts, including speech and language professionals to get initial impressions and suggestions.

Overall, the response was encouraging. Experts highlighted the app's flexibility and potential to provide meaningful, real-life speaking practice. They appreciated the replayable nature of scenarios, the ability for users to define their own conversational goals, and the inclusion of voluntary stuttering as a feature. They viewed this as a valuable step towards helping users build confidence and reduce fear around stuttering.

One of the key points raised was the importance of positioning *EaseTalk* as a practice tool, not a clinical or therapy solution. They emphasized that the app could serve as a helpful complement to therapy, especially for encouraging self-guided practice outside of clinical settings. They also suggested ways clinicians could engage with the app in a coaching capacity, such as customizing scenarios or guiding users through voluntary stuttering exercises.

Further suggestions included introducing more nuanced difficulty levels within scenarios and incorporating environmental challenges like background noise, time pressure, or conversational interruptions. These features could make the practice more realistic and transferable to daily situations.

Their feedback strongly reinforced the idea that *EaseTalk* should focus on empowering users to take ownership of their speech journey without placing pressure on fluency. Going forward, we aim to explore these recommendations in collaboration with clinicians and expand the app's capabilities.

## IV. Discussion

We recognize the sensitive nature of stuttering and the valid concerns many clinicians have about using AI in this context. Feedback related to stuttering must be handled with sensitivity and nuance, as individual goals can vary greatly. For some people, speaking more, even if it involves more noticeable disfluency, can represent meaningful progress, especially when it reflects reduced avoidance or increased self-acceptance. On the other hand, non-clinically informed feedback can lead to increased anxiety in some situations, which can unintentionally undermine a person's communication confidence [14]. Another issue is that language models can sometimes produce responses that are inaccurate, inconsistent, or misaligned with clinical practices. With these concerns in mind and after discussions with clinicians, we made a deliberate decision to exclude AI-generated feedback from the current version of the app. In future iterations, we aim to explore safer and more transparent approaches, such as retrieval-augmented generation, which can limit AI responses to trusted, therapist-approved knowledge sources for any stutter specific feedback.

One of the most important future steps for *EaseTalk* is formal clinical validation. While initial expert feedback has been positive, we plan to conduct an ethically approved study involving individuals who stutter to understand real-world outcomes better. Currently, the app supports only the English language, which limits accessibility for multilingual users. Future versions should expand language support to better reflect diverse user backgrounds.

During our discussions with experts, we found that the app has potential use cases beyond stuttering. *EaseTalk* could be beneficial for individuals with social anxiety, especially those who experience stress in everyday conversations or when speaking with strangers. Possible scenarios include practicing introductions during networking events, preparing for dating conversations, or handling difficult conversations at work. The structure of scenario-based role play could also be adapted to support language learners, individuals preparing for interviews, or students building confidence in classroom presentations. These possibilities open new directions for extending *EaseTalk* into a broader speech support platform.

## V. Conclusion

*EaseTalk* provides a flexible way for individuals who stutter to practice speaking in realistic everyday scenarios. By combining speech recognition with prompt-engineered language models, the app can detect disfluencies and support techniques like voluntary stuttering to build confidence and self-awareness. Feedback from early expert evaluations has highlighted the app's potential to complement traditional therapy and serve as a valuable tool for independent speech practice. As we continue development, our focus will remain on user empowerment, safety, and transparency. Future work includes adaptive scenario complexity, ethical clinical validation, and trusted feedback mechanisms.

## VI. Acknowledgments

This publication has emanated from research conducted with financial support of Research Ireland under Grant 12/RC/2289-P2, which is co-funded under the European Regional Development Fund. For the purpose of Open Access, the author has applied a CC BY public copyright license to any Author Accepted Manuscript version arising from this submission.

## References

[1] M. E. Wingate, "A standard definition of stuttering," *Journal of Speech and Hearing Disorders*, vol. 29, no. 4, pp. 484–489, 1964.

[2] J. S. Yaruss and R. W. Quesal, "Stuttering and the international classification of functioning, disability, and health (ICF): An update," *Journal of Communication Disorders*, vol. 37, no. 1, pp. 35–52, 2004.

[3] E. Yairi and N. G. Ambrose, *Early Childhood Stuttering: For Clinicians by Clinicians*. Austin, TX, USA: Pro-Ed, 2005.

[4] R. Wolraich, "Stuttering: Diagnosis and Treatment," *American Family Physician*, 2008.

[5] M. Klompas and E. Ross, "Life experiences of people who stutter, and the perceived impact of stuttering on quality of life: Personal accounts of South African individuals," *Journal of Fluency Disorders*, vol. 29, no. 4, pp. 275–305, 2004.

[6] A. Craig, E. Blumgart, and Y. Tran, "The impact of stuttering on the quality of life in adults who stutter," *Journal of Fluency Disorders*, vol. 34, no. 2, pp. 61–71, 2009.

[7] Stamurai. [Online]. Available: https://stamurai.com/

[8] BeneTalk. [Online]. Available: https://benetalk.com/

[9] B. Arachchi, J. Sanjeewa, H. Wijesooriya, M. Chandrasena, J. Kishara, T. Kelegama, and V. Rajapakse, "StutterAI: Virtual assistant for stutter detection and analysis through machine learning and natural language processing approaches," in *Proc. 5th Int. Conf. Advancements in Computing (ICAC)*, pp. 525–530, 2023.

[10] C. Herring, "Exposure and voluntary stuttering as a mechanism of desensitization," *Ph.D. dissertation, Michigan State University*, 2024.

[11] C. D. Constantino, W. H. Manning, and S. N. Nordstrom, "Rethinking covert stuttering," *Journal of Fluency Disorders*, vol. 53, pp. 26–40, 2017.

[12] L. Plexico, W. H. Manning, and H. Levitt, "Coping responses by adults who stutter: Part II. Approaching the problem and achieving agency," *Journal of Fluency Disorders*, vol. 34, no. 2, pp. 108–126, 2009.

[13] K. J. Logan, *Fluency disorders: Stuttering, cluttering, and related fluency problems*, 1st ed., Plural Publishing, 2020.

[14] K. R. Bauerly, "Characteristics associated with social anxiety in adults with developmental stuttering: A review," *Medical Research Archives*, vol. 12, no. 10, p. 5876, 2024.