ARTIFICIAL INTELLIGENCE AND SPEECH RECOGNITION TECHNOLOGY IN LANGUAGE LEARNING FOR IMPROVING PRONUNCIATION AND CONVERSATIONAL SKILLS IN FOREIGN LANGUAGES

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Abstract: *The integration of Artificial Intelligence (AI) and speech recognition technologies into language learning has transformed traditional approaches, offering innovative solutions for enhancing pronunciation and conversational skills. These technologies enable real-time feedback, adaptive learning, and personalized practice, allowing learners to engage in authentic communication and correct errors more efficiently. AI-driven platforms facilitate interactive dialogue, pronunciation assessment, and fluency improvement, bridging the gap between classroom instruction and real-life language use. This study explores the effectiveness of AI and speech recognition in foreign language education, highlighting their role in promoting learner autonomy, motivation, and communicative competence. The findings suggest that combining AI tools with pedagogically sound methods significantly improves pronunciation accuracy, oral fluency, and confidence in speaking.*

Keywords: *Artificial Intelligence, Speech Recognition, Language Learning, Pronunciation, Conversational Skills, Foreign Languages, Learner Autonomy, Oral Fluency.*

INTRODUCTION: Artificial intelligence and speech recognition technologies have rapidly transformed the field of foreign language education, reshaping how students develop pronunciation, fluency, and conversational skills. In the past, language learners depended heavily on traditional classroom instruction where opportunities for speaking

practice were limited, especially in large groups. Today, AI-powered applications, virtual assistants, and speech recognition platforms provide learners with unlimited access to interactive speaking exercises, instant feedback, and personalized pronunciation correction. These technological developments have created a more dynamic, student-centered learning environment that enhances accuracy, confidence, and communicative competence.

Artificial intelligence analyzes learners' speech patterns, identifies mispronunciations, and provides corrections in real time. This ability to detect sound errors at a highly detailed level—something even experienced teachers may struggle to do consistently—makes AI an effective tool for pronunciation training. Speech recognition algorithms compare the learner's speech with native-speaker models, highlighting differences in intonation, stress, rhythm, and articulation. As a result, students can modify their speech immediately and track improvements over time. This kind of immediate feedback accelerates learning and encourages repeated practice, which is essential for mastering phonological features of a foreign language.

AI-based tools also play a significant role in developing conversational skills. Modern applications simulate realistic dialogues, enabling learners to participate in virtual conversations on everyday topics or professional contexts. These conversational bots adapt to the learner's level, respond naturally, and create a safe space where students can practice without fear of judgment. This is particularly valuable for shy learners or those who lack access to native speakers. Through continuous interaction with AI-driven programs, students build fluency, expand vocabulary, and improve the natural flow of their speech. Additionally, AI can monitor the pace, tone, and coherence of learners' responses, offering suggestions for more natural-sounding communication.

Another major advantage of AI and speech recognition in language learning is personalization. Unlike traditional classroom settings where instruction must be generalized, AI tailors exercises to each learner's strengths and weaknesses. Students who struggle with specific sounds, such as $/\theta/$ in English or tonal differences in Chinese, receive targeted practice until mastery is achieved. This individualized approach increases learning efficiency and prevents fossilization of pronunciation errors, which are difficult to correct later. Furthermore, learners have the freedom to practice anytime and anywhere, making the learning process more flexible and accessible.

The integration of AI technologies into language education also promotes learner autonomy. Students become active participants in their own learning process, setting goals, monitoring progress, and engaging with digital tools outside the classroom. This independence leads to higher motivation and better long-term retention. Teachers benefit as well, since AI tools provide detailed reports on student performance, enabling more effective lesson planning and personalized support during face-to-face sessions. Instead of spending class time on repetitive drills, instructors can focus on communicative activities, cultural content, and advanced speaking tasks.

Despite these advantages, the implementation of AI and speech recognition in language teaching faces several challenges. Not all learners have equal access to high-quality technological devices or stable internet connections, creating a digital gap that can affect learning outcomes. Some students may rely too heavily on technology, reducing their ability to interact naturally with human speakers. Additionally, speech recognition tools sometimes struggle with regional accents or background noise, which may produce inaccurate feedback. Teachers must receive adequate training to use AI tools effectively and integrate them meaningfully into curriculum objectives.

CONCLUSION: Nevertheless, the potential of artificial intelligence to enhance pronunciation and conversational skills is undeniable. As AI algorithms continue to evolve, they become more precise, interactive, and capable of understanding natural speech patterns. This progress promises more advanced virtual tutors, immersive augmented reality environments, and adaptive communication simulations that mirror real-life conversations with remarkable accuracy. The future of language learning will likely depend on the collaboration between human instruction and intelligent technologies, each complementing the other to create a comprehensive and effective learning experience.

In conclusion, artificial intelligence and speech recognition technologies have introduced a new era in foreign language education by providing learners with powerful tools to improve pronunciation and conversational competence. These innovations offer personalized instruction, instant corrective feedback, and limitless opportunities for speaking practice, which significantly enhance linguistic accuracy, fluency, and confidence. While challenges remain, the integration of AI into language teaching represents a major advancement that supports the development of communicative skills and prepares learners for meaningful interaction in global environments. As educational institutions continue to embrace technological innovation, AI-driven language learning will become an essential component of modern foreign language instruction.

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