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(57) Abstract :

The voiceprint-based user authentication system (100) having essential components, including a processor and sufficient storage for voiceprint templates and system operations. The system (100) and method (200) incorporates at least one voice input component (102) for capturing user voice input. The enrollment and template creation module (104) is designed to capture voice samples, analyze distinctive voice characteristics, and generate unique voiceprint templates. An AI processing unit (106) enables real-time analysis of user voice characteristics during authentication. An authentication module (108) performs comprehensive voice input analysis, considering various voice characteristics, and generates a similarity score or confidence level. Finally, an authentication and verification module (112) is configured to verify user identity based on the similarity score, granting access when it exceeds a predetermined threshold and denying access when it falls below the threshold, optionally offering authentication retry or alternative methods.

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