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(57) Abstract :

The speech recognition device (100), powered by artificial intelligence and equipped with a processor and memory, employs a comprehensive architecture. This includes an audio input module (102) for capturing spoken language, a pre-processing module (104) to enhance audio quality, a feature extraction module (106) to extract key traits, a deep neural network model (108) trained on extensive datasets for recognizing and interpreting speech (110), and a post-processing module (112) that utilizes natural language processing techniques for refined understanding and analysis. The device adapts to various languages, accents, and speech variations, facilitated by elements such as sequence-to-sequence structures, attention mechanisms, and transfer learning. This integration empowers the device to transform spoken language into accurate text, enabling seamless user interaction and advancing natural language processing across diverse applications.

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