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### Smart Aid AI Powered Hearing and Speech Assistance for Deaf and Mute

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The Smart Aid Hearing Device is a device for users with hearing and communication disabilities which brings together various assistive technology into a compact wearable device. The system provides hearing assistance with noise-free sound amplification through microphone and DSP, speech-to-text processing in real-time using AI, and text- to-speech synthesizing enhanced with gesture reading for the user who is non-verbal. The device is composed of a low-power microcontroller, Bluetooth capabilities, MEMS sensors, and a rechargeable battery. As the device enhances user accessibility of information, it also increases their quality of life through the benefits of AI and machine learning together with advanced signal processing.

**Keywords:** AI Powered Communication, Assistive Technology, MEMS, Speech-to-text, Text-to-speech

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