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(54) Title of the invention : REAL-TIME SPATIAL VOICE DISENTANGLEMENT AND INTENT RELAY SYSTEM FOR NOISY MULTILINGUAL ENVIRONMENTS

(51) International classification	:G10L 21/0208, G10L 21/0216, H04R 3/00, G06F 3/16, G10L 15/20	(71) <b>Name of Applicant :</b> <b>1)NOIDA INSTITUTE OF ENGINEERING &amp; TECHNOLOGY</b> Address of Applicant :19, KNOWLEDGE PARK-II, INSTITUTIONAL AREA, GREATER NOIDA-201306, GAUTAM BUDDHA NAGAR, UTTAR PRADESH, INDIA Uttar Pradesh India
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(57) Abstract :

Disclosed herein is a wearable voice processing system (100) for real-time speech interpretation in noisy multilingual environments that comprises a frame assembly (102) configured to house and support system components within a wearable form factor. The system comprises a processing unit (104) configured to control and coordinate operation, a data input module (106) including a multi-channel microphone array configured to capture ambient audio signals containing overlapping speech sources and environmental noise, and a pre-processing module (108) configured for noise filtering, beam forming, and spectral transformation. A feature extraction module (110) generates time-frequency and spatial features, followed by disentanglement module (112) configured to separate multiple concurrent speech sources. A dialect processing module (114) converts speech into standardized linguistic representation, and an intent prediction module (116) determines contextual intent. A performance module (118) generates spatialized audio output and synthesized responses, and a communication module (120) enables optional interfacing with external user device.

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