

HUBOT- bridging the gap between human and robot interaction

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A variety of robots are available today and each having their own, unique applications. However achieving an efficient means of communication with these robots is still problematic. It is difficult for a robot to accurately analyse and follow voice commands given by its master. During human-human interactions, multiple sounds are simultaneously processed by our brain and we still segregate the sound containing the information we want, according to a release of Research Matters, a newswire.

This is not the case with robots; they are unable to differentiate various sounds in its environment. This is a major roadblock in human-robot interactions.

'HUBOT'- is a term coined by the Speech and Audio Group (SAG) at IISc, to represent any effective interaction which occurs between a Human and a Robot. The researchers at IISc are actively working towards enhancing Hubot communication, in order to obtain better response from robots to given commands. The techniques used to enable Hubot communication include, voice and keyword recognition, along with the gross localisation of sound. The setup includes placing multiple microphones on the robot which pick up various signals from the environment which are then processed for relevant information. The group is making great strides in its research.

"Humans have only one pair of ears. But a robot can have more! We can place the "ears" anywhere we want - we can have two ears on the robot's arms and have it wave them around" says Dr T.V. Sreenivas, Professor at the Department of Electrical Communication Engineering, IISc. He heads the Speech and Audio Group and is leading its research

Through their research these scientists have developed several techniques which work to make Hubot communication more efficient. One of these techniques is the Y-Array technique which works in an indoor environment, for localization and tracking of a moving source. This means that even if the robot and master are both in motion, the robot will still be able to efficiently track the commands given. Another such technique involves the use of multiple rotating microphones on the robot. This produces the same effect as moving your head around to pick up the location of a sound, the release said.