IBM 5 in 5 – Hearing
Fact Sheet

Hearing sounds is part of how we detect danger, navigate our environment, and communicate. Earth's atmosphere, water, and virtually any physical phenomenon, such as fire, rain, wind, surf, or an earthquake, produce their own unique sounds. Animals make their own sounds, including song and speech, and from the moment they're born babies are communicating through sound to their caregivers.

IBM researchers have developed technologies to 'hear' and understand the sounds important to us. For example, IBM is partnering with medical experts and academic institutions to collect data that correlate baby sounds to their internal conditions and behavior, and developing advanced translation systems to be used with infants and toddlers in the future. Such a tool will recognize and understand infants' fussing sounds and tell us what they're really communicating based on being taught what sounds mean what, so we can distinguish between a baby being hungry, too hot, tired or in distress.

IBM is also developing distributed sensor networks that will use sensors embedded in mobile phones and cars that will help provide information about city conditions such as pollution, congestion or the health of a community by 'listening' to sounds such as coughing and sneezing. This system will be a backbone for similar networks that can be placed in other settings including mountains, forests or infrastructure that will help detect the onset of weather events or weakening structures. By identifying sound pressure, vibration and sounds waves of all different frequencies cognitive systems will interpret these sounds in combination with other senses, to warn us when trees are ready to fall, if a mudslide or flood is imminent, if a bridge is threatening to collapse etc.

Advances in hearing and voice recognition technologies will detect emotion and state of mind (hesitation, confusion etc.) via sounds and language. In the next five years, new technologies will allow us to cancel out unnecessary background noises to improve the quality of a conversation or even discern the emotion and mood of whoever is speaking to us so we can better react to the discussion.