Method of Spatial Information Transmission Through Acoustic Channel

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We developed a new method of notification of a person about the surroundings through an acoustic channel. Suggested method allows creation of a device that assists visually impaired people the ability to move safely in environments with static and moving obstacles. This model was repeatedly experimentally checked and proved to be efficient. Device, which uses the suggested method, may scan the user's surroundings by gathering data from ultrasonic locators or analyzing photos. If an obstacle occurs or moves in the surroundings, the device reacts to it by sending a sound signal to a user by the following simple algorithm: direction - note, distance - volume of the note. Usage of the notes makes the simultaneous transmission of the information about many obstacles possible. Moreover, it allows visually impaired to quickly get used to the device. The main advantage of the invented device is that the acoustic signal receiver in the human ear has many nerve fibers, which end with a resonator of a specific frequency. Thus, monotonous signals are decoded directly by the ear and almost instantly directed to the proper areas of the brain and reaction follows. In the case of the words or phonemes, many receptors are irritated and a matrix of the signals is created. As well, use of tones doesn’t restrict communication with others. A person can perceive acoustic signals of the surroundings while communicating with others. We believe that such simple devices may help many visually impaired persons and improve their quality of life.

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