

SONAR VISION METHOD AND APPARATUS**ABSTRACT**

5 A method and apparatus for sonar imaging and ranging of objects is disclosed. The apparatus includes a sonar wave transmitter capable of broadcasting sonar waves at objects to be imaged and ranged. An array of microphones, e.g. in a 20×20 rectangular array at 2.4 mm apart from one another and corresponding to imaging elements of a display, is used to receive
10 the reflected sonar waves and signals generated therefrom are conditioned and digitized before being processed. Beamforming technique is used to improve the signal to noise ratio. Matched filtering is then applied on a beamformed signal, preferably on each of the direction of the reflected sonar waves to obtain the range information of the object. A combination of the direction, range and
15 magnitude of processed signal is then displayed as 3-dimensional image. A Doppler frequency detector may optionally be included to estimate the relative velocity of the object.

FIGURE 2 accompanies the abstract.