



US 20090279714A1

(19) **United States**(12) **Patent Application Publication**
KIM et al.(10) **Pub. No.: US 2009/0279714 A1**(43) **Pub. Date: Nov. 12, 2009**(54) **APPARATUS AND METHOD FOR
LOCALIZING SOUND SOURCE IN ROBOT**(30) **Foreign Application Priority Data**

May 6, 2008 (KR) 10-2008-0041786

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Woo-Jin Choi, Seoul (KR)**Publication Classification**(51) **Int. Cl.**
H04R 3/00 (2006.01)(52) **U.S. Cl.** **381/92; 901/1**(57) **ABSTRACT**

An apparatus and method for localizing a sound source in a robot are provided. The apparatus includes a microphone unit implemented by one or more microphones, which picks up a sound from a three-dimensional space. The apparatus also includes a sound source localizer for determining a position of the sound source in accordance with Time-Difference of Arrivals (TDOAs) and a highest power of the sound picked up by the microphone unit. Thus, the robot can rapidly and accurately localize the sound source in the three-dimensional space with minimum dead space, using a minimum number of microphones.

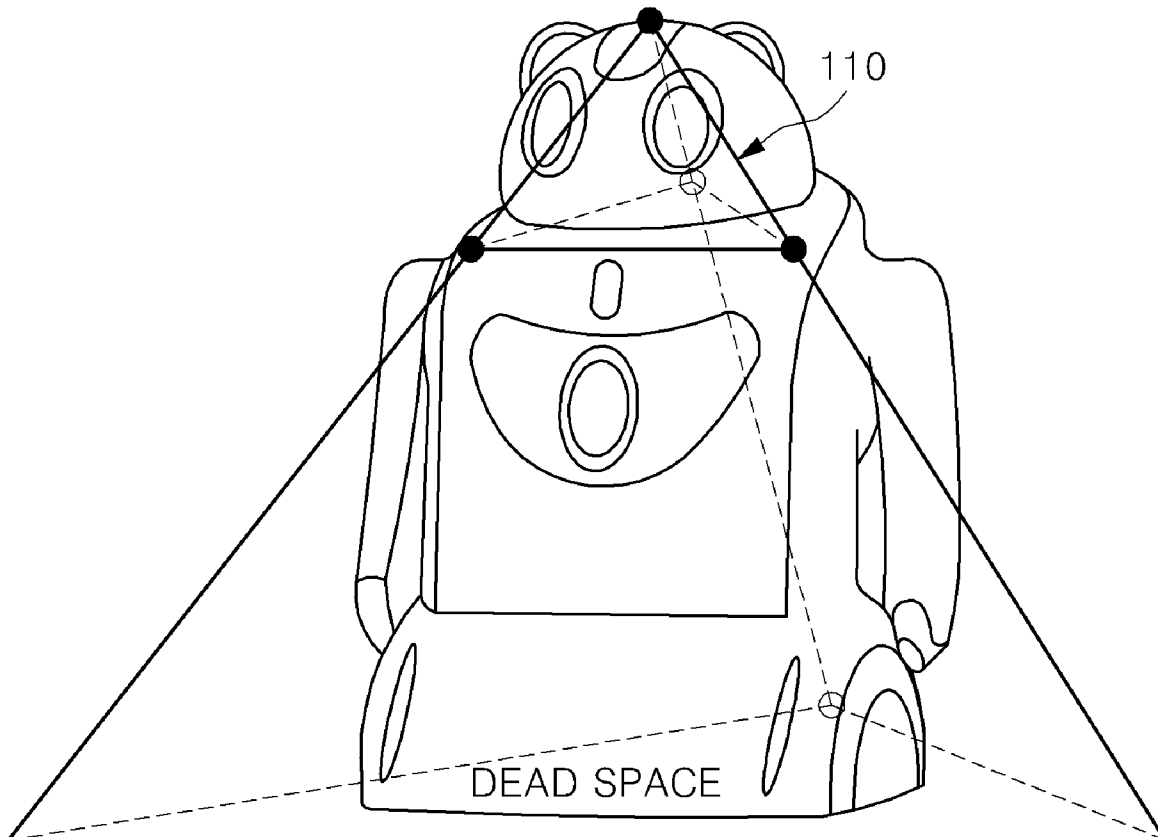
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FIG. 1

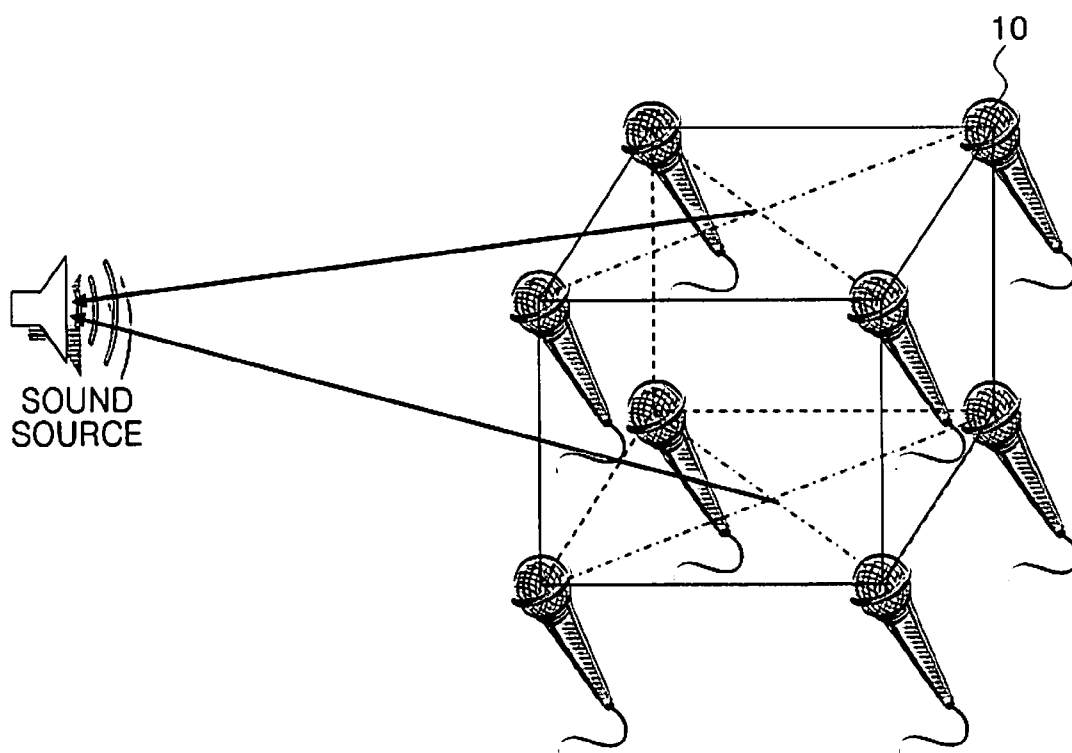


FIG. 2

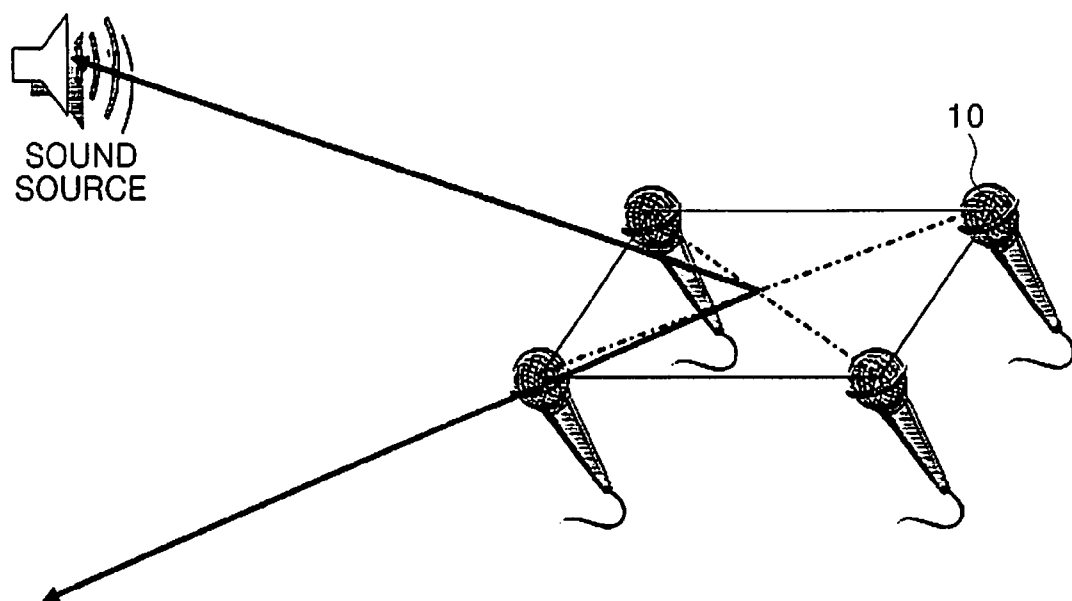


FIG.3

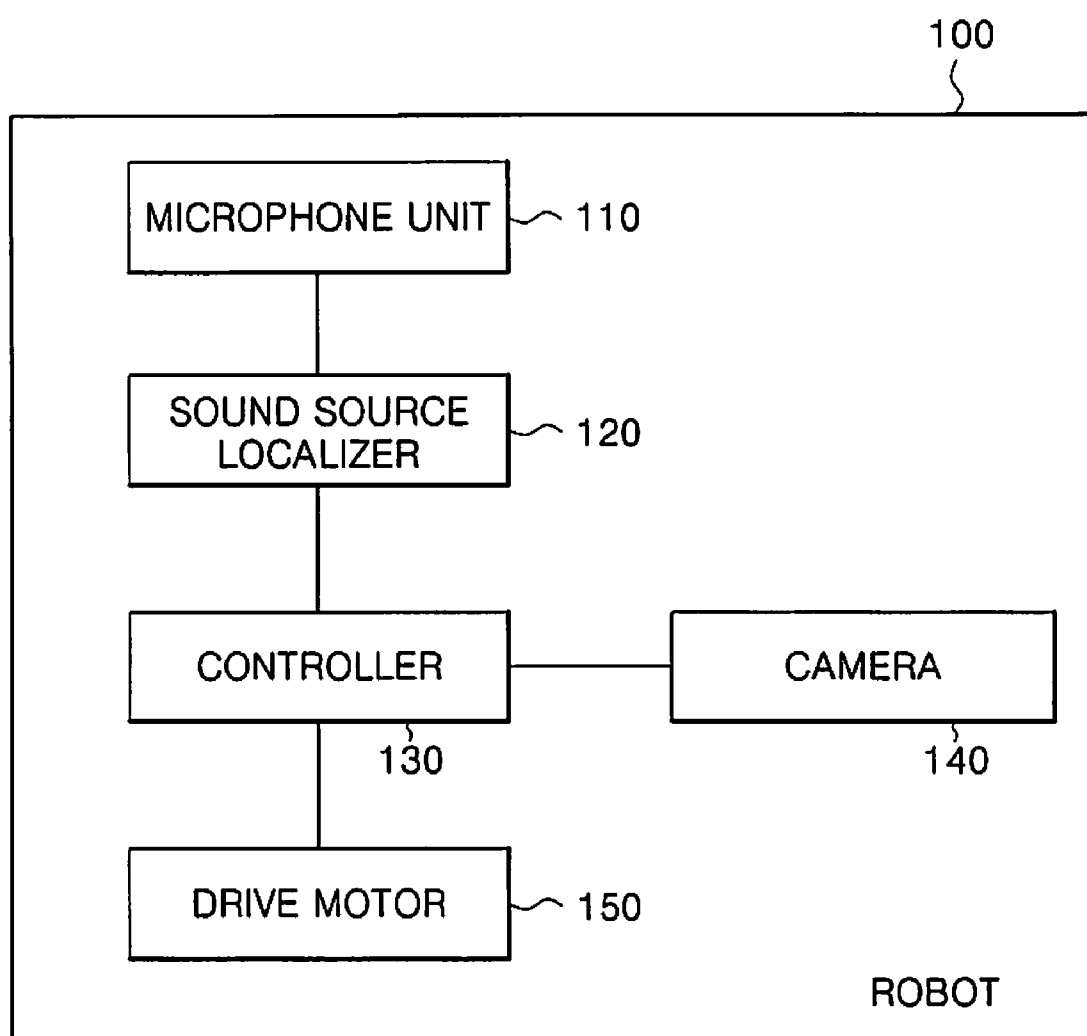


FIG. 4A

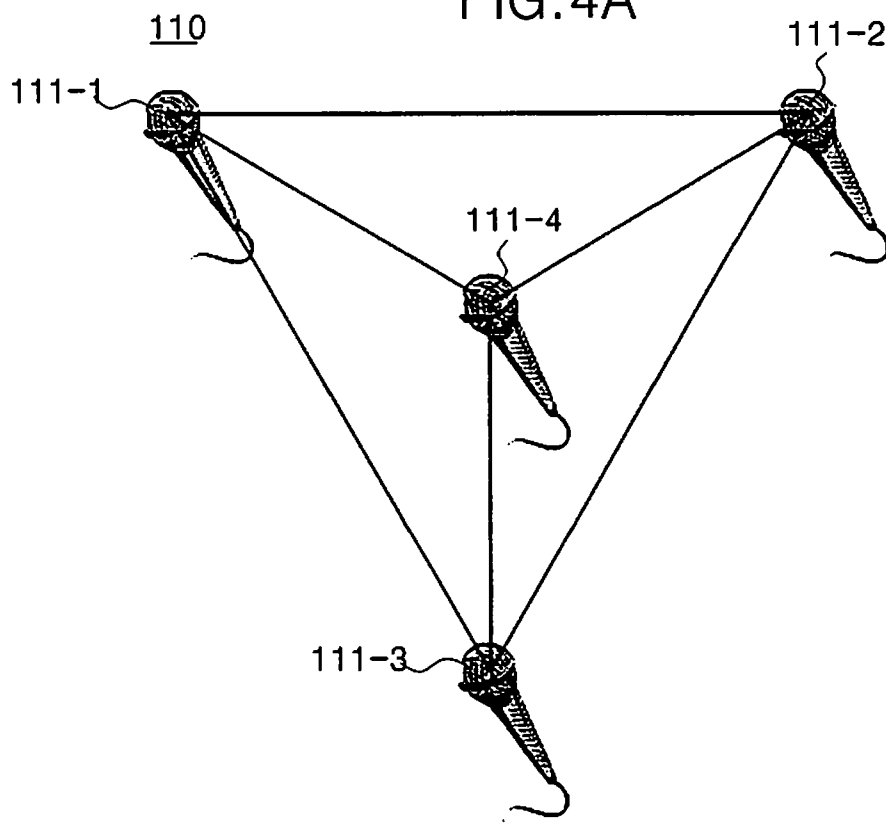


FIG. 4B

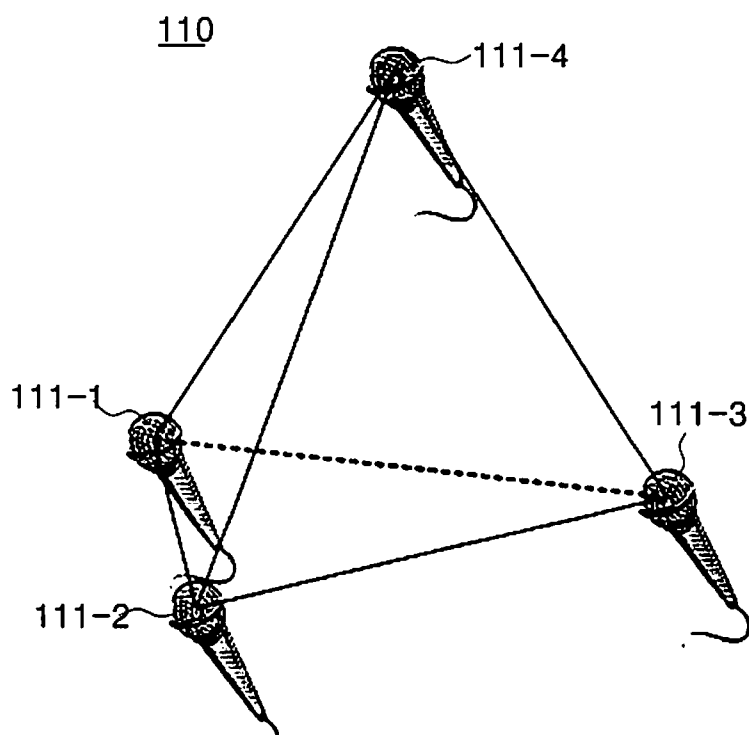


FIG. 5A

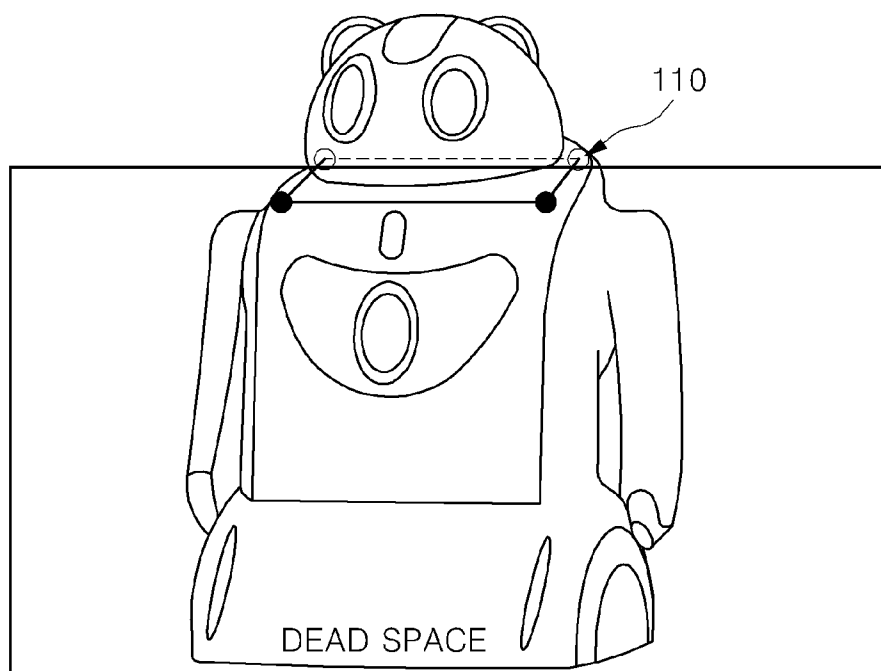
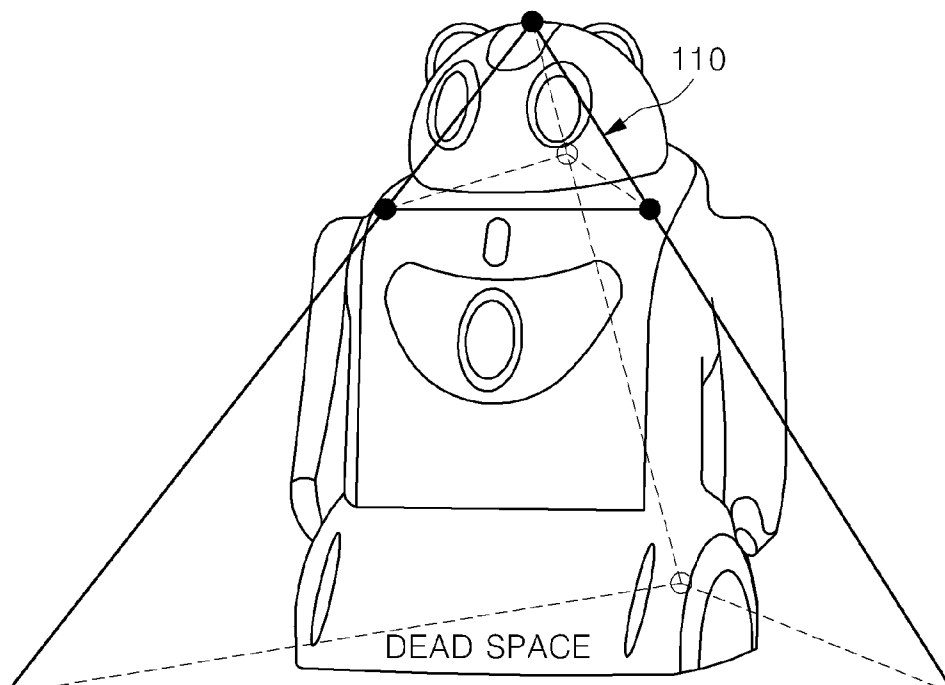


FIG. 5B



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