URN etd-0407109-183723-1950
Author Chin-Chien Chen
Author's Email Address No Public.
Statistics This thesis had been viewed 43 times. Download 0 times.
Department
Year 2007
Semester 1
Degree Master
Type of Document Master's Thesis
Language zh-TW.Big5 Chinese
Title An Approach to Semi-spherical Microphone Array Based Localization System
Date of Defense 0000-00-00
Page Count 81
Keyword
Microphone array
Fuzzy Sound Localization Algorithm
Sound Localization

Abstract
A semi-spherical microphone array based sound localization system for service robots is proposed in this thesis, which offers the robot hearing functions to distinguish where the sound is. The hardware structure of this system consists of 12 capacitor microphones disposed in two layers on the semi-sphere of 19 cm diameter. In which, the upper layer disposes four microphones at every 90 degrees, and the lower layer disposes eight ones at every 45 degrees. The hardware can be mounted upon the head of the robot to determine the 3D relative locality relationship between the sound and the robot. Based on this data, the robot can perform face-to-face conversations, direct interaction, or/and objective searching. Besides, since the proposed system applies the fuzzy localization inference frame, even in the environment with higher electrical noise and echo interference, it also can acquire satisfactory recognition. From the experimental results, it can be seen that the proposed system not only has improved sound localization recognition, but also provides the 3D locality information of the sound. One can adopt this framework on robotic systems to arise the flexibility of human-robot, environment-robot, or service interaction. It also makes the robot closer to life, moreover lets the robot become a member of family.
Advisory Committee Ming-Yuan Shieh - advisor

Files No Any Full Text File.
Date of Submission 2008-08-14