



TECHNOLOGY

Optimal Sensor Placement of Microphones in Very Large Sensor Arrays

OVERVIEW

Background

Microphone arrays, a series of individual microphones operating in tandem for a given area, have a variety of uses including extracting specific sounds from an ambient environment, surround sound recording, and localization, among others. However, using a very large microphone array can be difficult. A very large array will generate a large amount of data simultaneously, which presents problems with bandwidth, data processing, and power consumption needed for handling large amounts of audio in real time. Therefore, there is a need to develop systems for minimizing the amount of sensors that are active in a large array while maintaining the usefulness a large array provides.

Innovative Technology

Researchers at the University of Maryland and Siemens Corporation have developed a method for determining the optimal way to place a microphone sensor network in order to minimize the number of microphones needed and to reduce bandwidth requirements. The method uses a convex optimization technique to determine what subset of a set of sensors is correct for minimizing interference gain when interference is generated in an area monitored by an array. This method allows for optimization to work across multiple frequencies. This method improves over prior methods by allowing for multiple filter weights for each monitored frequency and allows for the sensors and interference in multiple dimensions.

APPLICATIONS

- Audio surveillance
- Microphone arrays
- Acoustic source localization

ADVANTAGES

- Allows for improved microphone array configurations
- Works across multiple frequencies simultaneously
- Reduces the number of active sensors in an array, saving bandwidth, power, and computing resources

CONTACT INFO

UM Ventures
0134 Lee Building
7809 Regents Drive
College Park, MD 20742
Email: umdtechtransfer@umd.edu
Phone: (301) 405-3947 | Fax: (301) 314-9502

Additional Information

INSTITUTION

University of Maryland, College Park

LICENSE STATUS

Contact OTC for licensing information

CATEGORIES

- Information Technology

EXTERNAL RESOURCES

- [US Patent 9,615,172](#)
- [US Patent 9,264,799](#)

IS-2013-152