Methods for automatic detection and recognition of acoustic sources MADRAS

1994 - 1996

Sujets :

Measurement Methods, Reference Materials, Standards

Type de contrat :

Cost-sharing contracts

Participants :

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Hide objective

There is a potential market for a new generation of instruments that can automatically identify and quantify, in real time, the various acoustic sources that make up a given acoustic environment. By providing noise control engineers with the means to obtain a detailed picture of any acoustic environment that people are exposed to, such instruments would enable noise annoyance in daily life and in the workplace to be better controlled. The aim of the MADRAS project was to develop the basis for a new generation of instruments that can automatically identify, in real time, the various acoustic sources in a given acoustic environment and assess their impact.

Hide achievements

The final instrument, which could be used either for on-site measurements or for long-term monitoring, will be able to correctly identify the vast majority of sources that make up typical acoustic environments in daily life or in the workplace. A broad classification is firstly carried out between major classes including stationary sources, impulsive noise, speech and shouts, isolated vehicles and heavy carriers. This step benefits from the description of the environment provided by the operator through a simple dialogue. Then the nature of each source is identified with as much detail as possible by using approaches adapted to the different classes. Source identification is possible even when the sources are corrupted by other noises. One of the industrial

partners in the project is planning to commercialise the instrument.

Hide general information

Artificial intelligence approaches together with advanced processing techniques were developed and tested to perform the automatic identification and quantification of the various acoustic events that can occur during the period of analysis. The automatic source recognition algorithms operate by comparing the processed sound pressure level data in the time and frequency domains with parameters derived from a wide-ranging and comprehensive data base of typical noises. The actual data base specifically recorded for the purpose of this project includes more than two thousand events and is available on CD-ROM.