ISEP-DEE
Licenciatura em Engenharia Electrotécnica e de Computadores

Seminário/Estágio (Proposta)
Ano lectivo 2011/12

Titulo:

SoundPrint: real-time acoustic characterization in 3D using wireless sensor networks

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Breve descrição do trabalho:

There is an eagerness to monitor noise pollution, both at public (e.g. city) and private (e.g. factory) levels. This is a complex and expensive task that public administration and often also private entities are willing or forced to take over. Some preliminary works have show the potential and feasibility of wireless sensor networks (WSNs) for environmental noise monitoring (mostly for outdoor urban environments), as WSNs can potentially be deployed at unprecedented scale and density with reduced costs and negligible visual impact.

The three-dimensional (3D) real-time characterization of the noise map of an industrial automation area as well as its correlation with industrial machinery and operator states (e.g., batch of product XYZ, machine door opened, clean up of waste material) would provide management information in order to define policies and actions to provide better working conditions. This principle can be applied to dynamically actuate in insulation panels to optimize space acoustics (e.g. factory floor or auditorium) number of people) or to optimize citizens and road traffic flow in an urban environment.

The objective of this Master Thesis is to design of a three-dimensional network of (mostly) wireless acoustic sensors and the corresponding data processing techniques to characterize noise, namely in what concerns noise sources, direction, frequency and intensity. Signal processing techniques such as dual-FFT and cepstral analysis may be combined with state-of-the-art data aggregation and compression techniques.

Outros dados relevantes:

Por favor enviar e-mail com CV resumido para mjf@isep.ipp.pt

Para mais informações sobre as actividades de I&D do CISTER na área de redes de sensores, visite http://www.cister.isep.ipp.pt/research/sensor+networks/

Recursos necessários no DEE:

A Unidade de Investigação CISTER disponibilizará os equipamentos necessários. Em princípio, não serão necessários recursos do DEE, a não ser apoio no desenvolvimento de potenciais plataformas de hardware.

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