

NoiseMap

Andrea Cuttone¹, Lasse Seligmann Reedt¹, Morten Georg Jensen²

¹DTU Informatics and Mathematical Modelling, Technical University of Denmark

²DTU Management Engineering, Technical University of Denmark

INTRODUCTION

Noise pollution is becoming a problem, especially in large cities. Studies show that in daily life, 70% of people are exposed to average noise levels during a day that can cause long-term hearing damage (Flamme et. al., 2012). Many local, national and international organizations have strong interests in gathering data on noise exposure. NoiseMap is a personal informatics system for Android mobile phones that measures the level of ambient noise, and allows the user to reflect on how much noise he is exposed to.

RESULTS

A working prototype for NoiseMap was developed as part of the course "02827 Mobile Application Prototype Development". The main target audience of NoiseMap are:

- private citizens that want to monitor and minimize their exposure to noise
- local, national and international organizations that need to perform noise pollution measurement in cities and buildings

NoiseMap collects audio data from the microphone and location data from the GPS. This data is processed to provide different types of feedback to the user:

- Immediate noise exposure: the application displays the current ambient noise level in dB, a visual indication (a colored bar), a description of the level of risk (e.g. noisy area), and a suggested action (e.g. move away)
- Noise map: the noise level measurements are coupled with location data to create a map of noise intensities. This noise map is overlaid on a Google Maps
- History: the audio levels trends are showed as a graph over time
- Statistics: the data is grouped by time and dB levels and displayed using different graphs

A particular effort has been made to ensure that the phone microphone provides measurements with the highest accuracy possible.

CONCLUSION

Extensive testing of the application has been performed both by the authors and by external users. The application is able to provide valuable information regarding noise exposure and can be used to reflect on a number of elements:

- what are the areas with most noise pollution
- which times of the day or week is the noise exposure highest
- when does the immediate or cumulated noise exceeds healthy levels

Further work includes more precise measurements, additional visualizations and the possibility to submit the measurements to a shared noise map.