Alexander Keiser

CS1 Seminar Critique

I attended the seminar titled “Audio signal processing for dynamic noise mapping in smart cities” that was given by Dr. Francesc Alias working with the GTM research group on media technologies on November 22, 2017. I found this presentation very interesting because I have never really thought about or even considered noise to be hazardous and a pollutant.

The presentation was divided into 6 parts. Dr. Alias began with an introduction on hearing, the kinds of sounds we can hear as humans, and how our ears actually work. He also gave a brief overview on the optimal dynamic range for human ears. The power-point slides in this part of the presentation were slightly cluttered but well organized; they had a significant amount information on them. The visual aids contained within the slides could have been more effective if he had utilized additional slides and spaced out his information more.

The next segment of his presentation covered Audio Signal Processing. Here there were quite a few graphs and charts compressed into just a few slides, this made it difficult to fully understand the significance of each graph. He also played audio over some of these graphs without clearly explaining what was going on on. He continued by giving an excellent example of machine hearing with regard to identifying 9 different types of frogs. Listening to recordings of each frog and storing/processing the data allows the machine to identify a random frog. He goes on to talk about feature extraction with interest in perception. Some of these slides were dense with information, equations, graphs, flowcharts, and bullet points all on one slide. He did do a good job trying explain everything clearly to the audience, but I think the slides could have been better organized to assist with audience comprehension.

The next part of his talk was about environmental noise. He included very good statistics to emphasize the scope of the problem. The fact that a million healthy life years are lost to traffic noise every year Western Europe was a very powerful statistic. He also used a local statistic about the 36% burden of disease in Barcelona, this was a nice addition given its proximal relevance to the audience. These facts helped anchor down the topic and provide a foundation for the solution to the problem.

After explaining environmental noise and its impact on society, Dr. Alias introduced noise assessment methods for Europe and explained how these noise collection methods work for European cities. Wireless Acoustic Sensor Network (WASN) based noise monitoring can replace the previous static noise maps that are generated by cities every 5 years. Acoustic environments are dynamic while these static maps are outdated. Thanks to innovations in wireless networks, we can now begin to monitor noise in real time. Tests in the cities of Rome and Milan have been conducted, and the fact that the research group went and physically gathered data in 2 different cities really added to the credibility of the research. Dr. Alias then began explaining some of the challenges in the way of effectively utilizing this technology. He does this with two very long bullet lists that he briefly skims over. I felt that in order for the audience to get an effective understanding of where this technology is realistically at in terms of obstacles, he should have spent more time fleshing out some of these problems.

In conclusion, this presentation was very well executed delivering a high volume of information effectively in his one-hour time slot. I felt it was rushed in some areas but that is forgivable, as he most likely just didn’t have enough time to say everything he would have liked to. He is obviously very knowledgeable on the topic. The one real place that I saw for improvement was his slide design. Some of the slides were fairly cluttered and could have benefited greatly from being spaced out into several different slides. I am happy I attended this lecture and am going to be keeping an eye on this technology in the future.