

Color Depiction for Various Sounds

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Abstract –

Human perception of surrounding events is strongly dependent on audio cues. Thus, acoustic insulation can seriously impact situational awareness. We present an exploratory study in the domain of assistive computing, eliciting requirements and presenting solutions to problems found in the development of an environmental sound recognition system, which aims to assist deaf and hard of hearing people in the perception of sounds. To take advantage of smartphones computational ubiquity, we propose a system that executes all processing on the device itself, from audio features extraction to recognition and visual presentation of results. Our application also presents the confidence level of the classification to the user. A test of the system conducted with deaf users provided important and inspiring feedback from participants.

1.INTRODUCTION

Consciousness of what happens in the surrounding environment is strongly dependent on an individual's capacity to perceive sounds and accurately identify events related to them. Acoustic insulation can seriously compromise the ability of a person to acquire situational awareness, which is important for the execution of daily tasks, social interaction, and even personal safety. Hearing individuals may not realize how much they depend on auditory ability to perceive what is happening around them. Environmental sound awareness is necessary in a much higher number of situations than commonly imagined. Examples of this problem are provided by Matthews et al, who propose an environmental sound recognition (ESR) system for deaf users. Among other cases presented in their study, a participant reported that once had forgotten the vacuum cleaner on all night, since the device did not provide any visual cues that it was in operation. Based on previous research, the present document describes the design, development, and test of a mobile ESR system that aims to expand deaf individuals' situational awareness. We present an exploratory study in the field of assistive computing, describing solutions for problems encountered during the development of an ESR system specifically designed for deaf users. Currently there are still few studies on this topic, despite its importance. To foster future works, we formalize the requirements that guided the development of our system and provide details about the implementation of our solution.

In general terms, existing studies on sound recognition are divided into three categories: speech, music, and environmental

sound. In the latter case, the most common approach is the use of predefined environmental sound classes, which can then be applied to the indexing/retrieval of audio/video documents and in surveillance systems, for instance. In our study, due to the diverse and ever-changing nature of sounds that the system is supposed to cover, we had to address the open-set problem regarding ESR as well as the representation of uncertainty. During recognition tasks, with the system being executed in an environment where there is no control over the occurrence of sounds, results can be quite inconsistent. One alternative to minimize this problem is to provide the user with information on the confidence level for the classification results.

2. Body of Paper

This application helps the deaf people to understand what is happening in the surrounding. This application will detect noise from surrounding and display message of detected noise. So that user can know, what is happening in the surrounding. We get signals from our surrounding and our brain process those signals. We hear those signals via our ear. Keeping these important words in mind we present this project to mainly focus on aiding the speech impaired and paralyzed patients. Android is a mobile operating system (OS) based on the Linux kernel and currently developed by Google. With a user interface based on direct manipulation, Android is designed primarily for touchscreen mobile devices such as smartphones and tablet computers, with specialized user interfaces for televisions (Android TV), cars (Android Auto), and wrist watches (Android Wear).

The OS uses touch inputs that loosely correspond to real-world actions, like swiping, tapping, pinching, and reverse pinching to manipulate on-screen objects, and a virtual keyboard. Despite being primarily designed for touchscreen input, it also has been used in game consoles, digital cameras, and other electronics.

Android is the most popular mobile OS. As of 2013, Android devices sell more than Windows, iOS, and Mac OS devices combined, with sales in 2012, 2013 and 2014 close to the installed base of all PCs. As of July 2013, the Google Play-store has had over 1 million Android apps published, and over 50 billion apps downloaded. A developer survey conducted in April–May 2013 found that 71% of mobile developers develop for Android. At Google I/O 2014, the company revealed that there were over 1 billion active monthly Android users (that have been active for 30 days), up from 538 million in June 2013. Android Studio and Firebase are used for developing our project which are available everywhere. It provides the technical guarantee of accuracy, reliable and security. The current system develop is technically feasible with all the

resources need for development of the apps as well as the maintenance of the same is easy.

Android Studio is the official integrated development environment (IDE) for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. It is available for download on Windows, macOS and Linux based operating systems. It is a replacement for the Eclipse Android Development Tools (ADT) as primary IDE for native Android application development.

Android Studio was announced on May 16, 2013, at the Google I/O conference. It was in early access preview stage starting from version 0.1 in May 2013, then entered beta stage starting from version 0.8 which was released in June 2014. The first stable build was released in December 2014, starting from version 1.0. The current stable version is 3.2, which was released in September 2018.

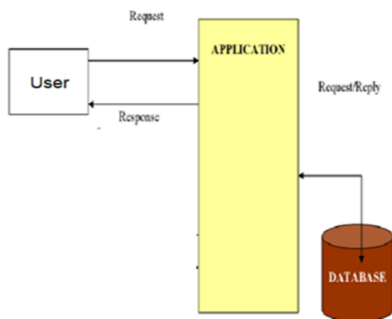


Fig-1: System Architecture

We are going to develop an application to overcome the limitations of the current system. The deaf people face many problems in their day-to-day life. As they cannot hear any kind of voice, they are not able to know what is happening in their surrounding without seeing. So, we decided why don't, we build an application, which will help deaf people to know surrounding noise. Firstly, you need to register yourself in this application with your name, email, phone number and password. After successful registration, login yourself. After login you can see six cards in front of you, named as garden, road traffic, station, environment, home door, explosion. As per place you need to activate card and keep application run in the background. When some noise will be detected, app will automatically show some messages. Firebase is a platform developed by Google for creating mobile and web applications. It was originally an independent company founded in 2011. In 2014, Google acquired the platform, and it is now their flagship offering for app development.

Firebase evolved from Envolv, a prior startup founded by James Templin and Andrew Le in 2011. Envolv provided developers an API that enables the integration of online chat functionality into their websites. After releasing the chat service, Templin and Lee found that it was being used to pass application data that were not chat messages.

Developers were using Envolv to sync application data such as game state in real time across their users. Templin and Lee decided to separate the chat system and the real-time architecture that powered it. They founded Firebase as a separate company in September 2011[4] and it launched to the public in April 2012.

Key features

- Android-specific refactoring and quick fixes
- Lint tools to catch performance, usability, version.
- Pro-Guard integration and app-signing capabilities.
- Template-based wizard to create common Android design

3. CONCLUSION

Application software has been computed successfully and was also tested successfully by taking "test cases". It is user friendly, and has required options, which can be utilized by the user to perform the desired operations. Application software meets the information requirements specified to a great extent. The system has been designed keeping in view the present and future requirements in mind and made very flexible. The goals that are achieved by the software are Instant access, Improved productivity, Optimum utilization of resources, Efficient management of records Simplification of the operations, less processing time and getting required information, User friendly, Portable and flexible for further enhancement.

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REFERENCE

1. Lawrence Rabiner and Biing-Hwang Juang, "Fundamental of Speech Recognition", Prentice-Hal/Englewood Cliffs, N.J., 1993. Shannon B.J., Paliwal K.K., "A comparative study of filter bank spacing for speech recognition", Proc.of Microelectronic engineering research conference, Brisbane, Australia, Nov. 2003.
2. Y. Linde, A. Buzo R. Gray, "An algorithm for vector quantizer design" IEEE Transactions on Communications Vol. 28, pp.84-95, 1980. F. Soong, E. Rosenberg, B. Juang, and L. Rabine, "A Vector Quantization Approach to Speaker Recognition", ATT Technical Journal, vol. 66, March/April 1987.
3. Zhong-Xuan, Yuan Bo-Ling, Xu Chong-Zh Yu, "Binary Quantization of Feature Vector for Robust Text-Independent Speaker Identification in IEEE Transactions on Speech and Audio Processing", Vol. 7, No. 1, Ja. Chachada, S., & Kuo, C. (2014). Environmental sound recognition: A survey. APSIPA Transactions on Signal and Information Processing, 3, E14. doi:10.1017/ATSIP.2014.12.
4. Sharma, Jivitesh & Granmo, Ole-Christoffer & Goodwin, Morten. Environment Sound Classification sing Multiple Feature Channels and Deep Convolutional Neural Networks. (2019).
5. Esmaeilpour, M., Cardinal, P., & Koerich, A. L. Unsupervised feature learning for environmental sound classification using cycle consistent generative adversarial network. Chiu, C. C., Sainath, T. N., Wu, Y., Prabhavalkar, R., Nguyen, P., Chen, Z., ... & Jaitly, N. State-of-the-art speech recognition with sequence-to-sequence models. In 2018 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) (pp. 4774-4778). IEEE nuary 1999. IEEE, New York, NY, U.S.A (2018, April).