Privacy and Voice Screening

For Environmental Sound Identification

**Contents**

[1. Abstract 3](#_Toc523734708)

[2. Problem statement 3](#_Toc523734709)

[3. Background 4](#_Toc523734710)

[4. Proposed Solution(s) 4](#_Toc523734711)

[a. Introduction of Solution…… 4](#_Toc523734712)

[b. Application of Solution……..4](#_Toc523734713)

[5. Stakeholders & Impacts 5](#_Toc523734714)

[6. Responsibility & Conclusion 5](#_Toc523734714)

[7. Reference 5](#_Toc523734715)

November 2022

**Authors:** Natasha Pegler, Steven Liu, Chen Si, Xuan He (list the name of group members)

This document is produced as one of the deliverables of the ‘responsible innovation project’ in the course ‘Professional Practice 2’ convened by Dr Ehsan Nabavi at Australian National University.

**Address Information**

The Australian National University, Peter Baume Building #42A, Linnaeus Way

Acton ACT 2601 Australia

**Phone:** +61 2 6125 5394 | **Email:** [ehsan.nabavi@anu.edu.au](mailto:ehsan.nabavi@anu.edu.au), [cpas@anu.edu.au](mailto:cpas@anu.edu.au)

## Abstract

|  |  |  |
| --- | --- | --- |
| Voice recognition will be a key part of the future of communication. It can listen to what people say, and interpret it to a digitized version that reads and analyses. For environmental voice identification, it is a field based on using machine models to identify sources of noise. This paper firstly presents the problem statement of privacy issue that should be considered in voice recognition. Secondly, this paper briefly describes the background to the application of sound recognition in the environment. Thirdly, the article will outline the proposed solutions based on the deep learning and machine learning algorithm. It helps to show the ideas from a professional perspective on how solutions can be clearly expressed and understood. In addition, discussion about stakeholders and their impacts can influence the development and application of environmental sound recognition technology. Finally, this report will connect the knowledge of responsible innovation with machine learning in order to provide the technology that can help in environmental sound recognition and achieve greater results and progress in the industry. |  |  |

## Problem STATEMENT.

With the rapid development of technology in the 21st century, voice recognition technology has been iterated and updated to reach a state of usability in noisy environmental scenarios. Since the rise of deep learning technologies, the technical shortcomings of voice recognition in terms of accuracy and speed have been reduced and industry acceptance of voice recognition has increased. However, with the rapid development of the technology, the hidden 'privacy' protections have been exposed to society and have attracted significant ethical and legal attention.

In particular, in environmental sound recognition technology, which was originally used to study various sounds in ecological environments over time, for the public good. People tend to ignore the importance of their privacy when they are in an external environment. The definition of privacy is that it represents a type of personal information that is not wanted to be known by others, including not being known in a particular form. So, in a sense, the detrimental consequences of privacy being known to others will inevitably arise in the context of the ambient sound recognition technology currently being developed.

## Background & context

* **Environmental sound identification:** Environmental voice recognition is a cutting-edge technology that integrates multidisciplinary knowledge, covering basic and cutting-edge disciplines such as mathematics and statistics, acoustics and linguistics, computers and artificial intelligence, and is a key link to classify audio in the technology of human-computer and natural interaction. Recognition targeting the sounds of the human surroundings. A monitor unit is installed in a particular environment, where it records and analyses detailed sound levels.
* **Industrial applications:** They can measure noise pollution, track vehicle movement or motor vehicle sounds. They can also monitor different scenarios, such as street scenes, indoor scenes and car scenes. The main purpose of Industrial sound event detection is to detect the presence of a target sound event within a continuous audio stream, e.g., to detect anomalous sounds from faulty equipment or sounds from an accident scene.
* **Environmental applications:** They include surveying bird or frog populations and listening for illegal logging. For example, monitoring the impact of logging on biodiversity in a particular area is necessary to better protect forest biodiversity. Acoustic data is collected to understand the impact of forestry reforms on forest biodiversity. Sound recognition can also be used to save endangered animals. Developments in bioacoustics are now already changing the way conservation works, and scientists predict that using this method has great potential to change the way we monitor species, assess the health of ecosystems and evaluate the impact of humans on nature.

## Proposed solution

### Introduction of solution

This is the introduction part.

### Application of solution

This is the detail part.

## STAkeholders & impacts

This is stakeholders’ part.

## Responsibility & conclusion

This is conclusion part.

## Reference

#### Level 4 heading goes here

On the Insert tab, the galleries include items that are designed to coordinate with the overall look of your document. You can use these galleries to insert tables, headers, footers, lists, cover pages, and other document building blocks. When you create pictures, charts, or diagrams, they also coordinate with your current document look.

#### Level 4 heading again

You can easily change the formatting of selected text in the document text by choosing a look for the selected text from the Quick Styles gallery on the Home tab. You can also format text directly by using the other controls on the Home tab. Most controls offer a choice of using the look from the current theme or using a format that you specify directly.

## Level 2 Heading AGain

### Level 3 heading goes here

On the Insert tab, the galleries include items that are designed to coordinate with the overall look of your document. You can use these galleries to insert tables, headers, footers, lists, cover pages, and other document building blocks. When you create pictures, charts, or diagrams, they also coordinate with your current document look.

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Data Set 1** | **Data Set 2** | **Data Set 3** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

#### Level 4 heading goes here

On the Insert tab, the galleries include items that are designed to coordinate with the overall look of your document. You can use these galleries to insert tables, headers, footers, lists, cover pages, and other document building blocks. When you create pictures, charts, or diagrams, they also coordinate with your current document look.