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**MARMARA UNIVERSITY**

**FACULTY of ENGINEERING**

**COMPUTER ENGINEERING DEPARTMENT**

CSE4088 Introduction to Machine Learning Project Midterm Report

Title of the Project

*“Sound Signal Classification “*

Group Members

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**Abstract**

Sound Signal Classification is one of the most widely used applications in Deep Learning. It contains learning to categorize sounds and to give notice of the category of that sound.Sound signal classification means categorizing certain sounds in some categories, like environmental sound classification. In modern urban environments, many social signals are disappearing both physically and acoustically with rising environment noise levels. The aim of the project is to ensure that these lost sounds or the sounds that are wanted to be separated are separated and recognized with the help of certain algorithms.

**The Works Accomplished So Far**

Research and studies carried out since the date of the project are given below as sub-tasks.

* **Literature Research**

We spent a lot of time reviewing articles and resources available on the internet to get ideas for our project or to learn how to approach it. Since sound signal classification is one of the difficult projects to be done in the field of machine learning, we had no trouble finding more than one source. While reading these articles, we observed what steps to follow, what resources we should use and what difficulties we would encounter while doing the project. One of the important points we made while reading the articles was that the audio files should be in a format that can be used in deep learning algorithms. In other words, we should not expect the algorithm to recognize an audio file directly. We need to convert the audio file to a suitable format. In the articles, we saw that another approach is to convert each of the audio files to the frequency domain using the MFC algorithm and to calculate the MFC attributes of these audio files, and we decided to prepare the project in this way.

* **Existing Project Research**

We searched the internet for similar projects to the one we were going to do. As a result, we found similar projects and examined how they approached the problem according to the articles we researched. In this way, we observed how to approach our project and which Python libraries we should use. In addition, we found open source data sets in the projects that we were examining and we decided to use these source sound files in our project.

**Remaining Work**

The remaining jobs are listed below:

* **Bringing The Dataset To The Appropriate Format**

Preparing audio files for use in deep learning algorithms and preparing their formats correctly.

* **Training and Testing**

Separating the data set containing the audio files into train and test validation and optimizing the algorithm according to these results.

* **Architectural Building**

Building CNN architecture using Tensorflow and Keras libraries

* **Accuracy Calculation**

We will train our model with audio signals and calculate validation accuracy by applying the validation test with audio signals.

**References**

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