SULEYMAN DEMIREL UNIVERSITY
ENGINEERING FACULTY

Machine Learning

Project documentation

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- Abstract

Everyone knows about the world famous Shazam application that can recognize a song or TV show in a matter of seconds. It's so accurate and fast that even Apple bought the entire Shazam. But even such a great algorithm has a drawback, it does not recognize Kazakh songs. This became my inspiration for my project. I decided to create such an algorithm so that it could recognize both Kazakh and foreign songs. I named my creation “Tabam” (which means “I will find” from Kazakh). At the beginning of the project, I wanted to create an algorithm with a large collection of data, but since I have a simplified version of the Shazam algorithm, training the model would take a lot of time. So I decided to take 5 songs as data.

- Introduction

  In the beginning of the project I asked ourselves
  How does shazam work?
  How to convert music files to numbers?
  How to work with deep networks?

- Aim and objectives of research

  The goal of my project is to create a simplified Shazam algorithm in my understanding.

- Background Review

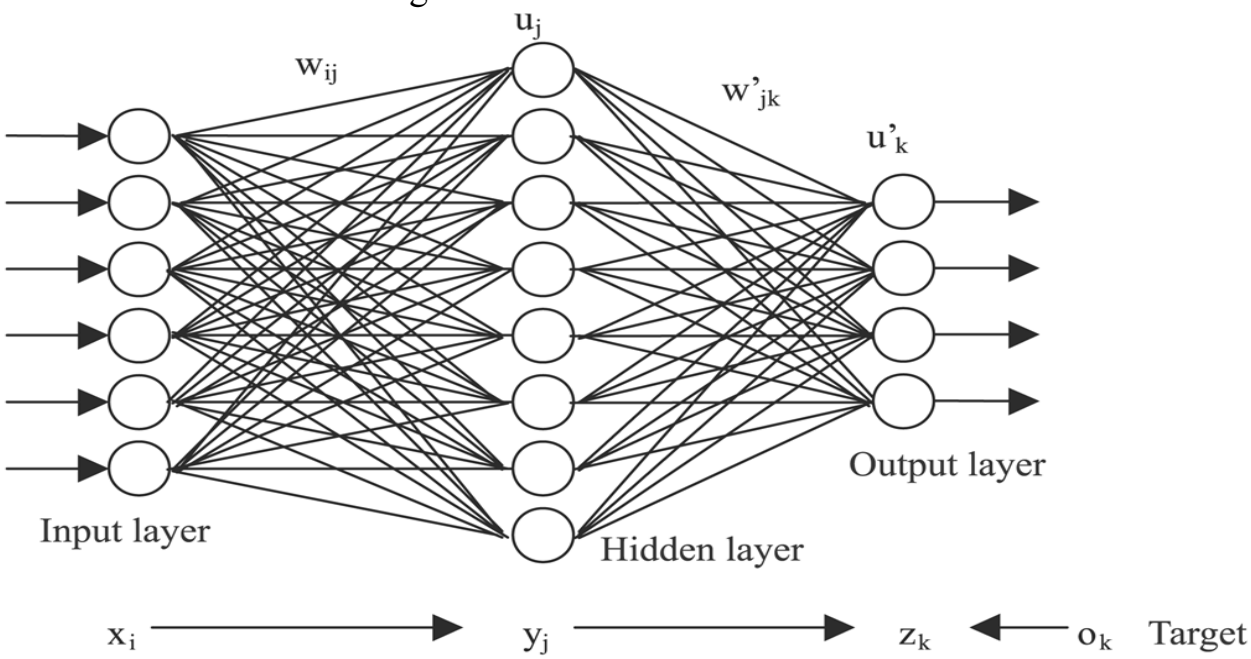
It's nice to have an all-knowing algorithm in your pocket that recognizes any music by showing the name of the author, even the text and much more, but there are times when Shazam fails. As mentioned earlier, when playing songs in Kazakh or little-known songs, the algorithm fails. As a consequence, I tried to close this gap.

- Methods and Materials

  In my project I used 3d for combining data of my songs but I couldn't train data so I used pca for training data. Also I used in my project deep network in input layer I used relu function in hidden layer also relu and finally in output layer I used sigmoid function

- Data and Results

  I used 5 different songs



This picture represents my simple AI. Overall I have 3 layers. In the first layer neurons 825 in the second hidden 415 and in the last 5. Accuracy of my model is approximately 70%

- Discussion

In discussion I want to say that for a big set of data songs you need to well prepare a model that takes a long time. For example in training 5 songs it takes 30 to 40 minutes and it could not show good accuracy. Now just image how many times take for just 100 songs

- Conclusion

This project showed us how to work with deep network and what kind of problems could be

- References
  I don’t have references ‘cause project fully made by me