

AI1110 : Probability And Random Variables

Software Report

Soham Rajesh Pawar
CS22BTECH11055

Abstract—In this assignment we made a Music Player in python which uses numpy module of python to shuffle and play the songs.

of these permutations has an equal probability of being generated.

In our case we have 20 songs so we have $20!$ ways to permute the array of 20 songs each and each permutation will get a uniform probability of getting selected of $\frac{1}{20!}$

FUNCTIONALITY OVERVIEW:

1) Song Shuffling:

The program shuffles the songs in the specified directory, ensuring a unique and random playlist every time.

2) Playback Control:

The user interface provides easy-to-use controls. The "Play" button plays the next song in the shuffled list, while the "Pause" and "Resume" buttons allow for convenient playback control.

3) Reshuffling:

The "Reshuffle" button reorders the entire song list, enabling a fresh playlist. This feature prevents repetition.

4) Previous Song Playback:

With the "Previous" button, I can replay the previously played song.

NUMPY.RANDOM.SHUFFLE:

The `np.random.shuffle` function in NumPy is used to randomly permute or shuffle the elements of an array in place. In terms of probability, `np.random.shuffle` can be seen as a process that generates a random permutation of the elements in the array, where each possible permutation is equally likely.

Let's consider an array with N elements. When you apply `np.random.shuffle` to this array, it randomly reorders the elements, creating a new permutation. The number of possible permutations of N elements is $N!$, which is the factorial of N . Each