# Lab 4 - Acoustic Emanation Attacks

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Overview.

This program utilizes a machine learning approach to identify keystrokes from audio recordings of typing on a keyboard. It employs a Multi-Layer Perceptron (MLP) neural network that processes audio signals to detect key presses based on their frequency characteristics. The code first captures the audio data, then applies Fast Fourier Transform (FFT) to extract relevant features, and finally trains the model on data labeled with corresponding letters of the alphabet.

Once trained, the model can make predictions about characters from new audio inputs, including secret phrases. The output is structured to highlight the most likely predictions for each character, which simplifies the interpretation of results. This system provides an effective method for detecting and predicting keystrokes, enabling the recovery of specific phrases, such as "password," from recorded audio.
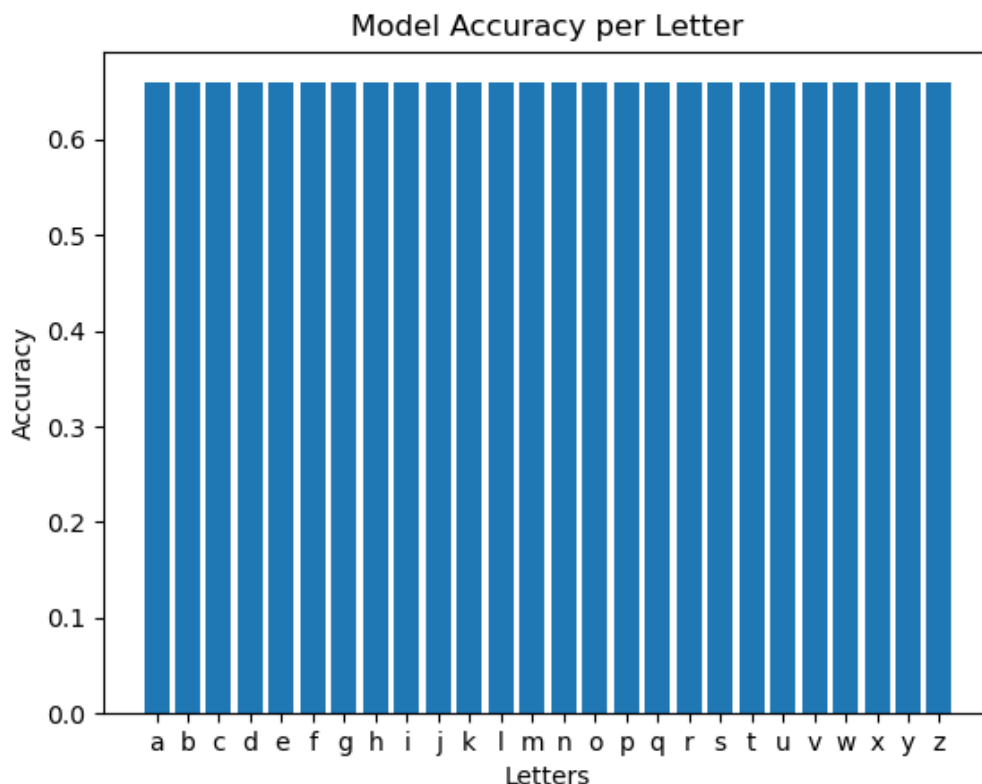
The Model accuracy: 0.6594202898550725

Recovered secret

This system provides an effective method for detecting and predicting keystrokes, enabling the recovery of specific phrase as the task highlighted "The audio file contains the recording of *secret* typings - an 8-character passphrase." such as **"password,"** from recorded audio I was able to recover.