**Audio Spoof Detection Integrated with a Home Automation System Using IoT**

MAIN PROJECT REPORT

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**ABSTRACT**

Authentication has become an essential aspect of our daily lives, with various authentication systems in place, ranging from traditional lock screens to biometric authentication systems. Among these systems, audio-based authentication has gained popularity, where users use specific words or phrases to unlock their devices and objects such as doors and mobile phones. However, the current audio authentication systems face a significant issue, as they only verify and extract the features of words and voices without classifying human voice and recorded human voices, leading to audio spoof attacks. To address this issue, the proposed system aims at using advanced machine learning models such as RNN and LSTM to classify human voice and recorded human voices, overcoming the problem of audio spoof attacks and recognizing the genuineness of the voice. The proposed system can be further integrated into any IoT system or home automation system, adding an additional layer of security to the accessibility of the device. The system's integration with IoT and home automation systems further enhances its security capabilities, making it a reliable authentication system for everyday use.

**CHAPTER 7**

**CONCLUSION**

The Home automation system developed in this project is a reliable and efficient solution for safeguarding against audio spoofing attacks. The integration of an audio spoof detector and speaker identification system ensures that only authorized users can access the automated devices in the home. The accuracy obtained for the audio spoof detection model is 85%, which is a significant improvement over existing methods.

The proposed speaker identification system, which utilizes MFCC feature extraction and GMM model, has been tested against both known and unknown users. The system performed as expected, effectively identifying the known user while denying access to the unknown users. This ensures that only authorized users can control the home automation system, thereby increasing security.

The use of Arduino UNO board, LED lights, servo motor, connecting wires, and breadboard for IoT integration provides a cost-effective and reliable solution for home automation. The integration of IoT devices with the audio spoof detector and speaker identification system ensures that users can control their home environment with ease and convenience.

The System demonstrates the effectiveness of integrating an audio spoof detector and speaker identification system with IoT devices for home automation. The proposed system provides reliable protection against audio spoofing attacks while ensuring that only authorized users can access the automated devices in the home. The accuracy obtained for the proposed system is promising and shows great potential for future research in this field.