ARDUINO BASED REAL-TIME VIOLENCE DETECTION SYSTEM USING DEEP LEARNING

PROJECT PHASE II REPORT

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BONAFIDE CERTIFICATE

Certified that this project report **"ARDUINO BASED REAL-TIME VIOLENCE DETECTION SYSTEM USING DEEP LEARNING"** is the bonafide work of **KISHORE S (211161021), PRAVIN B (211161034), THAMIZHMANI V (211161052),** who carried out this project work under my supervision.

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INTERNAL EXAMINER	**EXTERNAL EXAMINER**
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ABSTRACT

In our work, we develop a simplified real-time violence detection and alarm system using an Arduino board, integrated with essential sensors and communication modules. As violence in public and private spaces remains a significant concern, our system aims to enhance safety by providing timely alerts when violent activities are detected. The system employs a PIR motion sensor and a sound sensor module connected to an Arduino board to monitor a specific area for signs of violent behavior. The Arduino board serves as the central processing unit, analyzing data from the sensors to detect abnormal movements and loud sounds indicative of violence. When such activities are detected, the system triggers an alarm through an active buzzer module and sends alerts to a mobile app or web interface using an ESP32 Wi-Fi module. This real-time communication ensures that responsible individuals are promptly notified, enabling swift response and intervention. The hardware components include the Arduino UNO or MEGA, a USB camera for video monitoring, sound and motion sensors for environmental sensing, and a Wi-Fi module for network connectivity. The software implementation involves writing Arduino sketches to read sensor data, process it, and implement logic for alert generation. The simplicity of the hardware setup and the straightforward software development make this system cost-effective and easy to deploy. Extensive testing and validation are conducted to ensure the system's accuracy and reliability. By integrating AI and IoT with basic Arduino functionalities, this project offers an accessible solution to violence detection, contributing to enhanced safety and security in various environments.

Keywords: *Arduino, Violence Detection, Real-Time Monitoring, PIR Motion Sensor, ESP32 Wi-Fi Module.*

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S.NO	ACRONYMS	EXPANSION
1	CNN	Convolutional Neural Network
2	RNN	Recurrent Neural Network
3	IoT	Internet of Things
4	RAM	Random Access Memory
5	ROM	Read Only Memory
6	ESP32	Espressif System 32 Chip
7	LSTM	Long Short-Term Memory