

A Review on Anti-Theft Door Mat System for IoT Based Home Security

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Abstract: The growing concern for home security has led to the development of innovative anti-theft systems. This project presents an IoT-based anti-theft system for homes, utilizing a smart doormat integrated with face recognition technology. The face recognition technology is applied to reinforce the home security system with an anti-theft doormat system that is based on IoT. The anti-theft door mat system is designed to enhance home security by detecting unauthorized individuals at the entrance. Key components of this system include an Arduino microcontroller, pressure sensors embedded in the doormat, a GSM module for communication, a power adapter, and an LED display. The pressure sensors detect the presence of a person stepping on the mat, triggering the face recognition system to identify if the individual is authorized. If the system recognizes the person as an authorized family member, it remains inactive; but if it recognizes an unauthorized individual, the system goes into action at once. If the system detects an unknown or unauthorized face, an alert is immediately sent to the homeowner via the GSM module. Once it finds any unknown person, it sends the information to the family members using the GSM module. The member of the family will give an alarm to the suspicious person. This way, the homeowner might take an early action to observe the situation or send a siren and immediately call in case of illegal intrusion. The LED will show the related visual output of known or unknown persons to make sure information is in real-time. With these included IoT technologies, this door mat system becomes very effective in preventing unauthorized entry. Through the integration of a pressure sensor and face recognition, the system greatly reduces the cases of false alarm and becomes of reliable detection. A setup based on Arduino is both customizable and expandable, practical, and cost-effective for home protection. This system thus provides a smart, automated approach to enhancing home security while minimizing human intervention.

Keywords: Arduino, Pressure sensor, GSM module, Adapter, LED, IOT, Home Security, Real-Time Surveillance