**EMPOWERING WOMEN’S SAFETY WITH SMART IOT TECHNOLOGY: A ROBUST PROTECTION SYSTEM**

**Abstract:**

The project titled "Empowering Women’s Safety with Smart IoT Technology: A Robust Protection System" aims to enhance women's safety by leveraging a combination of Arduino and a Python-installed PC. The system incorporates a webcam connected to the PC to facilitate real-time surveillance. Serial communication is established between the PC and Arduino for seamless coordination. In case of an emergency, a designated switch triggers a series of protective measures. An image of the potential attacker is captured and promptly sent to a pre-configured email address. The system employs a buzzer alert to draw attention to the situation and includes a shock mechanism, utilizing a locally available mosquito bat, to further deter the assailant.

This innovative approach utilizes IoT technology to create a comprehensive safety system that not only documents potential threats through visual evidence but also provides an immediate physical deterrent to enhance women's safety in various environments.

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**Keywords: Python installed PC, Emergency switch, Camera, OpenCV, Shock**

**Existing method:**

In the current scenario, there is no standardized system for ensuring women's safety with integrated IoT technology. Traditional methods rely on personal alert devices, mobile applications, or emergency hotlines, which may not offer real-time surveillance or a robust defense mechanism. The absence of a unified and technologically advanced solution leaves women vulnerable to potential threats, limiting the effectiveness of existing safety measures. This project aims to address these shortcomings by proposing a comprehensive system that combines Arduino and a Python-installed PC, leveraging the capabilities of IoT to provide a more proactive and responsive approach to women's safety.

**Drawbacks:**

1. Limited Real-time photo:
2. Dependency on External Services:
3. Inadequate Defense Mechanism:
4. Lack of Automated Alert Systems:
5. Absence of Integrated Shock Mechanism:

**Proposed method :**

The proposed method enhances women's safety through the integration of advanced technologies. An Arduino microcontroller, coupled with a Python-installed PC, forms the core of the safety system. A webcam connected to the PC enables real-time monitoring of the surroundings. In case of an emergency, a designated switch triggers a sequence of actions. The system captures an image of the potential threat, and sends the image to a predefined email address. This immediate response allows for swift documentation of the situation, aiding in subsequent investigations.

To further enhance security, a buzzer alert is activated simultaneously to attract attention and deter potential threats. Additionally, a shock mechanism is incorporated into the system using a locally available mosquito bat. This serves as a non-lethal yet effective deterrent, providing an extra layer of defense for the user. The integration of these features creates a comprehensive safety system that combines surveillance, evidence collection, and an immediate response mechanism to empower women in ensuring their security.

**Advantages:**

1. Real-time Photo capture
2. Immediate Documentation
3. Email Alerts
4. Buzzer Alert
5. Non-lethal Deterrent

**Block Diagram:**

**Power Supply**

**Arduino**

**Image EMAIL**

**From PC**

**PC**

Python

**Camera**

**Emergency switch**

**Buzzer**

**Relay**

**Shock(Inverter)**

**Hardware Requirements:**

* Python installed PC
* Arduino
* Emergency Switch
* WebCamera
* Inverter
* Relay
* Power supply

**Software Requirements:**

* Arduino IDE
* Embedded C
* Python IDLE