Proposed System: IoT-based Smart EVM

The proposed IoT-based Smart EVM is aimed to overcome the deficiencies of traditional EVMs by incorporating advanced features like biometric voter authentication, secure cloud-based vote storage, and real-time election monitoring. The system is based on few key components that cooperate effectively to ensure the security of this voting process and make it efficient yet user-friendly.

System Architecture

The core part is the Arduino Uno, being the central microcontroller that collects acts of other hardware components in the whole system. The ESP32 module provides Wi-Fi access, so the system can automatically update vote data in a cloud server in real time. It may ensure the safe storage of votes and the proper monitoring of the votes by officials located in a remote area.

The Fingerprint Sensor Module scans the fingerprint of the voter and checks against a pre-registered database to verify his/her identity. Therefore, the security is enhanced by only allowing qualified voters eligible to participate in the election. Upon verifying the voter's identity, they are then given a set of Push Buttons representative of available candidates. The voter selects his preferred candidate by pressing the button representative of that candidate.

This way, the system ensures transparency and avoids wrong choices, with an OLED Display that shows the chosen candidate's name once the voter selects them. The voter can confirm their choice before finalizing their vote. Visual feedback is immediate through LED Lights; a green LED means the vote has been cast, while a red LED alerts voters on wrong choices or problems. The system also carries a Buzzer to give an audio indication that the vote is indeed credited, providing thus another form of feedback to the voter.

Transmission and Monitoring Vote in Real Time

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